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Prize Medals have been awarded at the International Exhibitions of London in 1862, and Paris, 1867, for Dr. Roth's Works on Physical Education, Models, &c.

London: BAILLIÈRE, TINDALL & COX, 20, King William Street, Strand.

Hand-book

OF THE

MOVEMENT CURE;

A DESCRIPTION OF THE

Positions, Movements, and Manipulations,

USED FOR

PREVENTIVE AND CURATIVE PURPOSES,

ACCORDING TO THE

SYSTEM OF LING & THE WORKS OF ROTHSTEIN, NEUMANN, & OTHERS.

WITH CASES

ILLUSTRATING THE TREATMENT OF SPINAL AND OTHER DEFORMITIES, OF CHEST AND ABDOMINAL COMPLAINTS, OF PARALYSIS, GOITRE, RUPTURES, HYPOCHONDRIASIS, HYSTERIA, AND OTHER CHRONIC DISEASES, BY THE SCIENTIFIC APPLICATION OF MOVEMENTS AND MANIPULATIONS.

With One Hundred and Fifty-five original Engravings.

BY M. ROTH, M.D.,

PHYSICIAN TO THE INSTITUTION IN OLD CAVENDISH STREET, LONDON, AND MARLBOROUGH PLACE, BRIGHTON, ETC. ETC.

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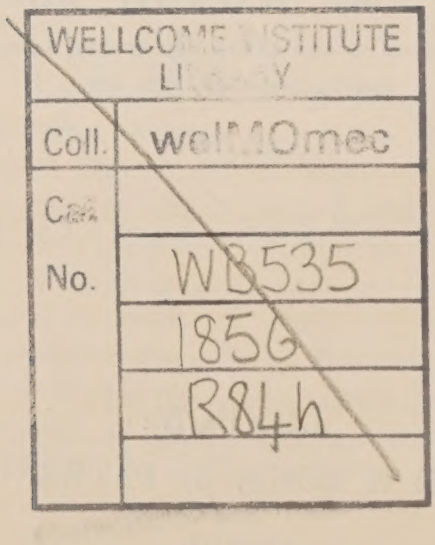

DEDICATED

TO

ALL MEDICAL PRACTITIONERS

Who are disposed to examine

BEFORE THEY CONDEMN.

"Je n'enseigne pas, mais je raconte."—MONTAIGNE.

PREFACE.

THE results which can be attained by a scientific application of Movements are a sufficient excuse for the publication of this Hand-book—the first English one on the subject. The title-page indicates the principal sources from which, in addition to my own practice, the materials have been taken; but, to render the book more complete, I have also availed myself of all the reports, pamphlets, and works published on the same subject, since the appearance of my "Prevention and Cure of Chronic Diseases by Movements."*

* With the exception of a mode of treating diseases, called by the Chinese *Cong-fu*, nothing is to be found resembling in the least the Movement Cure. The *Cong-fu* is a treatment of diseases by various ways of breathing, in previously determined positions. Those interested may find some details in the "Mémoire concernant des Chinois, par les Missionaires de Peking" (Paris, 1779), in the chapter, "Notice du Cong-fu des Bonzes Tao-se;" an extract from which I have published in the German "Athenæum for Rational Gymnastics."

I could have considerably increased the number of cases and prescriptions from my own practice, but I have selected only a few, and preferred giving all those which have been hitherto published by others with the prescriptions, which will give the student an opportunity of learning the practice of other professional men. My reason for inserting four cases immediately after the description of the commencing positions is, that I originally intended the work to be much shorter than it is, by not continuing it beyond those cases.

The tables at the end of the book will convey an idea of the diseases which can be treated by Movements, and will remove the erroneous notion, so prevalent amongst practitioners, that Movements are useful only in deformities. The list of the Institutions for the Movement Cure (established during the last ten years) shows the rapid spread of this mode of treatment.

Although I am very zealous in my advocacy of the treatment by Movements, I wish it clearly to be understood that I do not recommend it as a panacea: it will be useful in one stage or in one form of a disease, and not in another; it will suffice in one case, and will not help in another, without other remedial agents, which it does not exclude, unless they oppose the effect to be produced by the Movements. This branch of medical science is undoubtedly a very important addition to our other curative means, but it must not be over-estimated.

The physician, the surgeon, the orthopædist, and other medical specialists, will find the Movements a most valuable accessory in the treatment of many diseases, and the man who is engaged in the treatment by Movements as a speciality,

must not neglect to make himself acquainted with the progress of all other medical sciences, if he would not be reckoned among those empirics who profess to cure all diseases by the same means.

M. ROTH.

16A, OLD CAVENDISH STREET,
CAVENDISH SQUARE,
January, 1856.

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MEDICAL GYMNASTICS,

A FEW HISTORICAL NOTES ON GYMNASTICS.

WHOEVER is acquainted with the history of medicine, knows that gymnastics have been used from the most ancient times for the cure and prevention of disease. The history of medical gymnastics teaches us, that at various times this science has been considered more or less important, as a means of cure in certain diseases, and especially valuable as a preventive or prophylactic. It is impossible to enter fully into the history of this science; pages might be filled with the names alone, of ancient and modern works on gymnastics; but I may mention that the list of gymnasts begins with Æsculapius, who was thought to have been the inventor of bodily exercises, and includes Iccus of Tarentum, Herodicus of Selymbra, his pupil Hippocrates, Galen, Celsus, Avicenna, Oribasius, and all the celebrated ancient physicians. Mercurialis, collected in his treatise *De arte Gymnastica*, published in 1569 at Venice, all the most important passages in the ancient authors, on the subject of gymnastics, and his book was the source from which many

authors of the seventeenth and eighteenth centuries derived their knowledge. The great Sydenham is known by his advocacy of gymnastics; riding on horseback as a remedy in incipient consumption came into vogue greatly through his recommendation, and when dying, he consoled those who complained of the loss of the great physician, by saying—"I leave behind me three great and most important means, viz., air, water, and exercise, which will compensate for the loss of my person."

Fuller and Pugh must be named amongst the English authors on, and advocates of, medical gymnastics in the last century.

The educational part of gymnastics, which is at the same time a preventive of many diseases, has been cultivated by Guthsmuths, Pestalozzi, Jahn, Salzmann, Nachtigall, and others, to whom much of the development of this science is due.

Some notes about Ling.

There is no doubt that Ling, who was the originator of what is now called the Swedish system of gymnastics, knew the works of his predecessors on the science, to which his attention was first called in consequence of his being considerably relieved from an attack of rheumatic paralysis in his arm while fencing. Having previously received a classical education, he set about studying anatomy and physiology, and thus originated his rational system, entirely different from the gymnastics both of ancient and modern times. Ling was much versed in many other sciences; having previously studied theology, he lectured on history, and the mythology of the northern nations; he was a great poet, and one of the limited number of members of the Royal Academy of Sweden, and knight of the Polar Star. He was born the 15th November, 1766, died the 3rd of May, 1839. I mention these facts, because some reviewers, unacquainted with Ling's great ideas, and successful scientific gymnastic researches, have spoken of Ling with contempt, saying that he was only a fencing master, and consequently

unable to invent a system of gymnastics based on anatomical and physiological principles.

The oneness of the human organism, and the harmony between mind and body, and between the various parts of the same body, constitute the great principle of Ling's Gymnastics.

The development and preservation of the harmony between mind and body, as well as among the various organs of the body, is the object of Ling's system with regard to healthy persons, and this is the educational or prophylactic part of the system, while the restoration of the disturbed harmony of the different organs produced by disease, forms the subject of the medical part.

Gymnastic movements.

The means by which this harmony is preserved or developed in the healthy, and restored in the diseased body, consists in *gymnastic* movements, aided by all the rules of a sound regimen with regard to food, drink, sleep, dress, care of the skin, healthy habitations, mental influences, &c. and in many cases by appropriate medicines.

Gymnastic movements differ from movements in general in this—that though the latter require space and time, they do not require a determinate space, and a determinate period of time, and degree of force. It is this settled and definite amount of space and time in which the movement is to be done, as well as the determinate degree of force with which it is done, that enables us to influence the whole or a single part of the body in the manner necessary for the special purpose.

"To raise the arms from a hanging position, in a loose, random way without thinking, and to stretch them in the air, can have little corporeal effect, and certainly no mental one; but to stretch the arms in a manner and direction, and with a

velocity and force all previously determined, and exactly prescribed, and then to move their different parts (upper and forearm, hand and fingers) precisely as determined and commanded, this is a *gymnastic* movement." To make a friction along the course of a certain nerve, vessel or muscle, on a whole limb or any other part of the body, with a gradually increasing or diminishing, or constantly equal pressure, in a slow or quick time, more or less frequently repeated in shorter or longer intervals in a determined form, &c. according to a previously prescribed manner, is another instance of a *gymnastic* movement.

Value of anatomy and physiology in gymnastics.

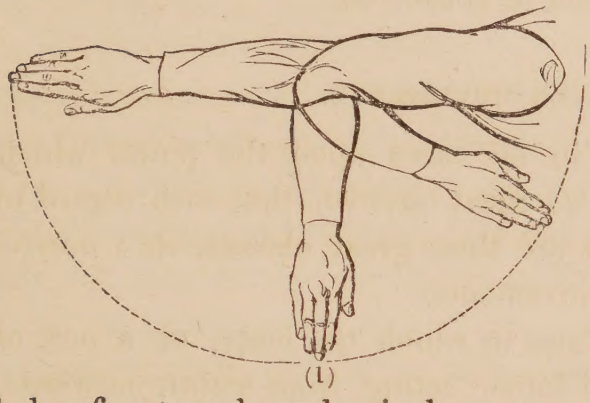
This indispensable precision in the execution of the gymnastic movements in all their relations to space, time, and force, makes it necessary that the gymnast, or person entrusted with the superintendence or direction of such movements, should know at least the elements of the anatomical structure, and the physiological functions of the various organs.

The value attributed to anatomy and physiology in gymnastics by Ling, is seen in the following quotation from his writings :— "Anatomy, that sacred genesis which shews us the master-piece of the Creator, and which teaches us how little and how great man is, ought to form the constant study of the gymnast. But we ought not to consider the organs of the body as the lifeless forms of a mechanical mass, but as the living, active instruments of the soul."

The professional man prescribing such movements must add to his store of knowledge, a knowledge of the theory as well as practice of the gymnastic movements; although this is a task which is more difficult than appears at first sight, he will be amply repaid by the cure of many chronic complaints which may have baffled his previous skill. The practical exact execution of gymnastic movement being indispensable to a successful treatment, and the professional man being unable to execute alone all the movements required, he is obliged as long as there is no training institution for gymnasts, to train his own assis-

tants, and consequently must know how to operate like a clever surgeon, whom Ling used to call "*an armed gymnast.*"

Commencing, intermediate, and final positions.


(1)

Every movement, that is gymnastic movement, has:

1st, *A commencing position* in which it begins, and which is assumed either by our voluntary power alone, or by the help of external mechanical means, or by the help of one or more persons; in fact it is the position from which the succeeding movement originates.

2nd, *Intermediate positions,* through which the whole or a part of the body passes, and which lie in the direction of the movement from its commencement, to its end, which forms the

3rd, *The final position,* in which the moved body, or part of the body, returns to a state of relative rest, and where the movement ceases.

The engraving, illustrates a movement where the arm is to be bent at the elbow (forearm-flexion). The stretched arm represents the commencing position, the forearm bent at a right angle with the upper arm is one of the intermediate positions, and the forearm forming an acute angle is the final position When an extension is to be done, the previous final position is the commencing position, and the previous commencing position becomes the final one; the intermediate positions remaining the same in both. The arm is drawn from above, in order to show more distinctly the three positions.

Difference of active, passive, and half-active movements.

Space does not permit me to enter into the differences, of the visible, or invisible, of the intentional, customary, reflex, sympathetic, emotional and other movements, which are mentioned

in my more extensive theoretical and practical exposition of Ling's system, but the differences of the gymnastic movements with regard to the moving power must be mentioned, especially as the terms chosen to express the power, are often misunderstood, and consequently lead to confusion.

Active movements.

As the effect depends in all cases upon the power which produces the movement, we must observe, that with regard to this moving power, there are three great classes, viz : *active*, *passive*, and *half-active* movements.

Active movements are those in which the body, or a part of it, is moved by an internal force, acting from within outwards. The action is originated and determined only by the will of the patient himself, and executed by vital contractions of muscles, subject to his will, and motory innervation; the action begins from within, and is propagated outwards, and the will of the patient not only gives the moving power, but determines also the direction, form, and time of the movement.

Passive movements.

Passive movements are all those in which the whole or a part of the body is moved by an external force, a force acting from without inwards, which in the gymnastic movements must proceed from another person, or several others (the medical man or gymnasts) by whom the action is also originated and determined ; the whole or a part of the body is moved only by other persons (gymnasts) ; the action begins externally, and is propagated inwards, and no vital muscular contraction takes place in any part of the patient.

Half-active movements.

Half-active movements, which I call *combined* movements, because they are the result of our own action, as well as that of one or more other persons, are those in which the will of the patient is not permitted both to give the impulse to the movement, and also to determine the direction and time. The

patient either gives the impulse and moving force, while another person (the gymnast) who resists, determines its direction, time, &c. or while the gymnast gives the impulse and the force to the movement, the patient resists and determines the direction, time, &c.

In an active movement the will acts with its entire influence, gives not only the impulse and force to the movement, but also determines *alone* the direction and time of the movement, and this will explain why Ling on physiological grounds only called the movements of the third class *half-active*, not thereby meaning that they are *less active*, an erroneous, though very general idea; on the contrary, these movements are, with regard to the muscular action, and other physiological effects, stronger than the merely active movements. I wish it to be clearly understood that the word *half* is used by Ling not to express a smaller quantity of action, but only to show that the will of the patient influences the movement only partially; in the half-active movements, the will of the patient, and the will of the gymnast act, in the intermediate positions in opposite directions, although there is a mutual understanding between them, that the one or the other will gradually give way to the opponent's increasing action. There is a kind of wrestling between certain groups of muscles of the patient, and of the gymnast, and it is previously prescribed which group, although resisting, is at the end to be vanquished.

Active-passive movements.

The so-called half-active movements are divided into *active-passive* and *passive-active* movements.

In using the term "*passive*" in these compounds, reference is invariably made to the *force* of other persons (the gymnasts). *Active-passive* are those half-active movements, in which the impulse, force, or innervation, proceeds from the patient, who is prevented, by the force of the gymnast, from determining the direction and time of the movements; and such a resistance is expressed in the prescription by placing after the desired movement the letters (G. R.) in a parenthesis, which means that the gymnast resists.

Passive-active movements.

Passive-active movements are those in which the impulse, force, or innervation necessary for the movement proceeds from the other person's (the gymnast's) will, and the patient determines only the direction and time of the action: this is expressed in the prescription by placing after the movement the letters (P. R.), which means that the patient resists.

There is in both classes of half-active movements a constant resistance during the intermediate positions, a resistance which begins at the commencing, and ends with the final position.

Physiological difference between active-passive, and passive-active movements.

The different places of the word "*active*" in the compounds *active-passive* and *passive-active*, indicate also that the physiological changes resulting from active movement, viz., increased motory innervation (or increased influence of the will on the motory nerves), increased arteriality (or more copious afflux of arterial blood), and vital muscular contraction, take place during the *active-passive* movements in those organs (muscles, tendons, &c.) which produce the movements; while in the *passive-active* movements, the innervation, arteriality, and muscular contraction take place in the organs which act antagonistically to the movement.

The different places of the word "*passive*" in the half-active movements, indicate that the physiological changes following the passive movements, viz., increased stimulus on the sensitive nerves, increased venosity (increased quantity of venous blood), and, according to the various forms of movements, either a mechanical tension, a mechanical relaxation, or compression of the muscles and other organs, take place in the *active-passive* movements in the organs acting antagonistically to the movements, and in the *passive-active* movements, in the organs corresponding to the movement.

Illustration of the various movements by engravings.

The following diagrams will serve to illustrate and to convey a more exact idea of the various movements on which I have dwelt *in extenso,* because they are a most essential part of Ling's system, in which it differs from all previous gymnastics, where the *half-active* movements have never been used for medical purposes; while the *passive* movements have been used only in a general way, without knowledge of their physiological effects, and with no view to their specific application to a single nerve, vessel, or muscle.

Active forearm-flexion.

(2)

The diagram (2) represents an *active right forearm-flexion;* the motory innervation, the impulse to the vital contraction of the flexor muscles (especially of the brachialis internus and biceps brachii) is given by the will of the patient, the direction or space through which the forearm moves while in the intermediate positions, is determined by the patient, and the duration, or time during which the movement lasts, depends also upon himself. The increased afflux of blood takes place in the flexors of the forearm, the transversal diameter of which increases, while their longitudinal axis diminishes; during the contraction, the course of the blood is momentarily retarded in the flexors, and immediately after the cessation of the contraction, the arterial blood is conducted with more energy, to all parts surrounding these muscles; in the extensor muscles and their tendons (triceps brachii and anconeus), and in all their surrounding parts, a mechanical tension is produced, which, with regard to its intensity, is in proportion to the more or less intense flexion. I do not enumerate the other physiological effects produced by the commencing position, which is called *right-yard-left-wing-right-walk-standing* position, because the left hand is placed on the

ft hip, while the right arm is extended outwards and sideways, nd the right foot placed in a determined distance from the left foot; the bent forearm shows the active flexion in the elbow.

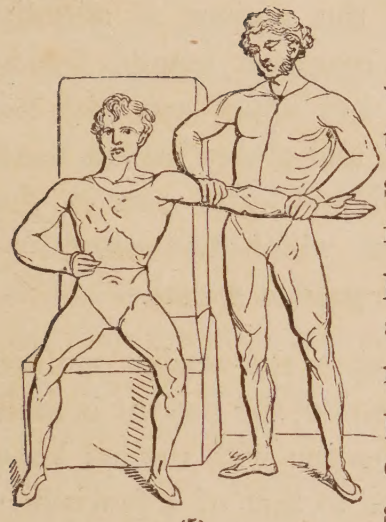
Passive forearm-flexion.

(3)

The patient is in a half lying position, with his feet placed apart on the floor, and not in the slightest degree exerting his will to stimulate the flexor muscles of his right arm to action, or to determine the direction and time of the movement, which is done merely by the gymnast standing at his side, who takes hold of the passive arm and bends the forearm as far as possible. The diagram 3 shows the commencing position, figure 4 the final position of the *passive right forearm-flexion;* in the first the gymnast places his left hand above the patient's left elbow, and fixes the upper arm by his grasp, while he bends with his right hand placed above the wrist joint the forearm of the patient, as in the position shown in the fourth illustration. The effects of this movement are, a high degree of mechanical tension in the extensors of the forearm, and in the external part of the fascia of the upper arm; the circulation of venous blood is retarded in the parts compressed in the bend of the elbow joint during the movement, and is afterwards increased; the sensitive filaments of the nerves are influenced; tightness is felt on the outside of the elbow joint, and pressure on the inside.

(4)

Active-passive forearm-flexion.



(5)

The patient is in a half lying position with the feet placed apart on the floor, the left arm stretched outwards, and sideways, and determined to bend his forearm; the innervation of the flexors proceeds from the patient, the direction and time are determined by the gymnast standing sideways, who fixes the patient's left upper arm, and resists, during the intermediate position; he seizes the lower and anterior part of the upper arm, near the elbow joint, with his right hand, while he resists with his left hand placed on the inner and lower part of the patient's forearm, near the wrist joint.

(6)

This diagram shows the final position of the movement, when the patient's forearm is at the greatest degree of flexion, while the gymnast is still endeavouring to resist, which is expressed by the bent position of his body, and the increased activity of his left arm.

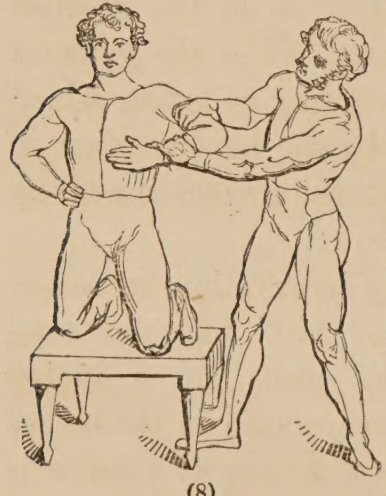
The motory innervation, increased arteriality, and vital muscular contraction, take place in a higher degree than in the active movements, especially in the biceps brachii, and brachialis internus, while a feeling of tension is perceptible, in the extensors of the forearm, and in the back part of the fascia of the upper arm.

Passive-active forearm-flexion.

(7)

The arm of the patient is slightly stretched, the gymnast stands beside him, fixes his left upper arm with his own right hand, and places his left hand on the external and lower part of the patient's forearm, which he presses forwards, while the patient resists.

In order to shew the reader another commencing position, the patient is seen in a kneeling position with the left knee forwards, similar to that of a foot when walking, and on an elevated level, therefore the name, "*Left-walk-high-kneeling,*" and as the right hand is on the hip, and the left arm extended outwards, the names of these arm positions, *right-wing, left-yard,* are given. The gymnast who has to bend the patient's forearm, gives the impulse to the movement, while the patient resists by an active contraction of the muscles, which are antagonistic to the forearm-flexion, especially the triceps brachii, in which also the effects of activity, viz: arteriality and motory innervation, and vital contraction, are increased. The diagram 8 shows the final position of this passive-active movement.



(8)

Dr. Neumann* uses the term "*duplicated,*" instead of *half-active,* and for *active-passive,* the term " *duplicated concentric,*" because the muscles producing the movement are

* Mr. Rothstein and Dr. Neumann are the most zealous advocates of rational gymnastics in Germany; the latter is the only author, besides the writer of this paper, who has hitherto published a practical, although far from complete treatise on the medical part of Ling's system. Notwithstanding the acknowledgment of us both that we have in a great measure compiled what we have published, animated by a desire to relieve the suffering and to call

in a greater state of contraction, and the points of origin and insertion approach each other more nearly. He calls "*passive-active movements*," "*duplicated excentric*," because the points of origin and insertion of the muscles antagonistic to the movement, are removed from each other.

Active forearm-flexion with assistance.

There is another forearm-flexion, where the patient, notwithstanding his will to make the movement, is unable to bend the forearm, and consequently must be assisted by the gymnast: the patient is either too weak, or his motory innervation not powerful enough to produce the vital muscular contraction necessary to an active movement. I do not find this class of movements mentioned in Ling's system, but as I have had occasion to make use of them in some cases of incomplete paralysis, or local weakness of muscles and tendons, I have thought it right to call the attention of the reader to this class of movements, which can be described as an active movement with assistance.

Terminology of commencing positions.

Every movement must be done from a definite commencing position, in one of the five principal positions, viz., lying, sitting, kneeling, standing, or hanging; the arms, legs, and body, may be in many different positions, which have either particular designations, or must he defined by a more circumstantial description. The term describing the position of the arms is placed first, then that relating to the trunk, then that

the attention of the profession to scientific medical gymnastics, we are assailed by those who call themselves the chosen trustees of Ling's system, and who boast of an experience and practice of more than twenty years, but who yet publish nothing of really practical utility. Surely it is not following out the designs of Ling to retard the development and propagation of his system, so beneficial to the healthy and the sick. I make these remarks in the cause of humanity and science, and not from any personal feeling towards those whose duty it was and is to make use of the press in spreading a knowledge of Ling's practice.

which refers to the legs and feet, and finally that indicating one of the five principal positions.

I have selected the following diagrams of some commencing positions to illustrate the nomenclature.

(9)

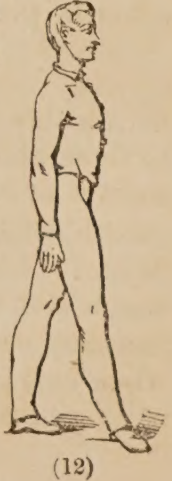
Stretch-position is a position of the arms as shewn in the diagram 9: the upper arms are kept firm at the side, while the forearms are bent up, as shewn by the dotted line of the figure, and then the arms raised near the head parallel with each other, and stretched upwards with the palms of the hands directed toward each other. If only one arm is to be in stretch-position, it is expressed by *half-stretch* or more correctly by *right* or *left stretch-position.* The engraving (10) represents *right-stretch-left-heel-support-standing-position.*

(10)

(11)

Oblique-standing-position is a position of the trunk. The body is bent sideways in such a manner that the head, neck, and trunk, are simultaneously moved, and in one straight line, while the lower parts of the body, from the hips, down, remain immovable. The flexion proceeds from the lowest part of the vertebral column, and may be continued till the fingers touch the external side of the knee joint.

Walk-standing position (12) is the usual position of the legs in walking, in which one foot is placed forwards at a distance corresponding to once or twice the length of the person's foot, measured from heel to heel. The feet are placed either at an angle of 90° or 60°, the latter is generally the walking angle.



(12)

The combination of these three positions in one is called *stretch-oblique-walk-standing position;* if the left arm only is to be stretched, and the

(13)

right hand to be placed on the right hip, the body to be bent in an oblique position to the right, and the left foot placed in walk position, as in the figure 13, it would be called, *right-wing-left-stretch-right-oblique-left-walk-standing position;* but if we wish this position done on both sides, one after the other, the name would be *right-wing, left-stretch, oblique, left-walk-standing-position;* in this case the body would be bent first on one side, and then without change of the position of the left arm and left leg, on the other.

Instances of commencing positions.

The following descriptions will convey to the reader an idea of commencing positions, the number of which amounts to several hundreds. I have made use of Neumann's book in the verbal part of these descriptions of the commencing positions; but the drawings are original, as are those of the positions for different movements, which last were drawn from the life at my institution by an eminent artist. My object in publishing these drawings of commencing and final positions for the various movements, is not only to render clear the various operations which, as far as I know, has never yet been attempted, but also to induce my colleagues in England and abroad, engaged in this medico-gymnastic system, to co-operate with me in endeavouring to popularize this treatment by similar iconographic publications.

THE FIVE PRINCIPAL POSITIONS.

First principal position.

Straight, or upright-standing position.

The feet are placed with the heels close together (in the prescription this is called *close* position), and the toes placed so far apart that the feet form a right angle, (*rectangular position*)

the inner surfaces of the legs and thighs up to the pubis are close to each other and form a straight line; the head and trunk are held upright, so that the spine assumes its natural form, namely, that of an elongated S, coming forwards in the region of the cervical and lumbar vertebræ, and convex backwards in the region of the dorsal vertebræ.

The chest protrudes, the shoulders are directed backwards and towards each other, which form is distinguished by the name of *arch-standing* position. The hands hang down freely at the sides.

The following are varieties of the simple straight standing position:—

1st. The *free standing position* in which the body does not lean on either side, but stands freely.

2nd. *High standing*, and 3rd, *low standing position*, the two latter being distinguished by the patient standing upon the floor, or else on an elevation, such as a small bench or chair. This distinction is important, in order that the gymnast may know at once where the free standing position should be assumed, because on a wrongly chosen place, the movement to be executed is often rendered more difficult or impossible.

4th. *Opposite standing* position.

5th. *Lean standing* position. The body leans with the anterior side, (*opposite*) or else with the posterior surface (*lean*) on a fixed object.

The resting of the side surfaces of the body against such an object, is also termed *leaning*.

In the prescription, the part of the body on which the patient chiefly leans, or that instrument against which he leans, is generally specified.

By *opposite-standing* position, without naming any part of the body, we understand leaning on the pegs of the rack with extended arms and grasping hands. (See position of the arms, fig. 22.)

6th. *Bound-standing position.* The patient leans with the stomach or the abdomen on a padded post, bound with a broad girdle, so that he cannot move his lower extremities and pelvis during the movements of the trunk.

7th. *Ledge standing position.* The patient stands with the feet fixed between two parallel ledges fastened on the floor, with a little cushion between the ankles, to prevent their pressing against each other.

Second principal position.

Kneeling position.

The head, arms, and trunk are kept as in the standing position, and when we add the word "*arch*" to "*kneeling,*" we mean that position in which the trunk is kept particularly upright and the chest brought forwards; the lower extremities are bent at the knees, at a right angle, the weight of the body is resting on the knees, which are on a little elevation, in order that the feet may not be stretched too much; the legs with their inner surfaces almost in contact.

In the kneeling position we have the following varieties: *the free—the close—the opposite—the lean—the high*—and *the low—kneeling positions.* In the low kneeling position, a large cushion is generally placed on the floor, while the gymnast, who stands on an elevation behind the patient, executes the movement.

Third principal position.

Sitting position.

The head, throat, trunk and arms are in the same position as in the standing one, the thighs forming with the trunk a right angle, with the legs a similar angle, and the feet and legs a third right angle; a chair supports the whole length of the thighs, the feet rest on the floor. If we wish the trunk to be kept straight in the sitting position, we add the word "*arch.*" The *high, low, free,* and *opposite sitting* position, are similar to the standing positions. *High* and *low* designate the high or low chair on which the patient sits. By *opposite sitting* is meant the position in which the gymnast stands before the sitting patient, who leans upon him. The term *lean-sitting* is seldom used, because the sitting positions with support on the back are also called *half lying* positions.

Fourth principal position.

Lying position.

The body of the patient is extended at full length on the back, even the head of the patient not being supported by a cushion. This position is assumed on the moveable part of the operating chair, to which, if not long enough for the body, a small chair is added for the feet to rest on. As in the standing position, we might specify the *opposite* and *lean-lying* positions, but we prefer to add to the word "*lying,*" the name of the part of the body upon which the patient lies, and instead of saying *opposite-lying* we say *forwards-lying,* which means lying on the anterior surface of the body.

Head-and-heel-lying signifies resting only on the back part of the head and on the heels, while the body is unsupported.

Shin-lying, calf-lying, thigh-lying, thigh-forwards-lying, leg-chine-lying, leg-arms-lying, and leg-forwards-arm-lying position, signify the resting on the specified parts upon the operating table, or upon the moveable part of the operating chair, while the rest of the body is unsupported.

Fifth principal position.

Hanging position.

The body of the patient does not touch the floor in any part, but is hung on the stretched arms, while the hands grasp a bar fixed horizontally at a suitable height. The thickness of the bar must be such, that the arms are parallel to each other while stretched above the head.

Simple standing positions.

These are divided into such as relate to the trunk, and in which the legs are in a straight position, while the arms hang down freely, or when the hands are placed on the hips, into those where the legs are in different positions while the trunk is kept continually straight, and into such as relate to different positions of the arms, while the trunk and legs remain straight.

TRUNK POSITIONS.

The feet are not always at a right angle, and with the heels placed together, but are sometimes placed side by side, and at other times several inches distant from each other. They must not be removed too far apart, because that constitutes the *stride-standing position*, which belongs to the limb positions. The arms do not always hang down freely, but are placed in such a way, with the hands on the edge of the hip bone, that the thumb is directed backwards, and the other fingers forwards, the joints of the elbows are strongly bent, and in the plane of a longitudinal section of the trunk, rather a little backwards than forwards. This position of the arm is called the *wing-standing position*.

Inclining position (fig. 3).

(14)

This consists in an inclination of the whole body forwards, which is kept perfectly stiff, bending only at the foot joints.

The position is called *half inclining* position as long as the body is able to keep itself from falling by its own muscular power without any support; *fully inclining*, when the angle of inclination becomes so acute that the body must be necessarily supported. This last position is called *head, chest, thigh, leg* or *instep-inclining position*, according as the support is given—on the forehead, on the chest, on the thighs, on the legs, or only the instep.

Inclined-standing position.

This differs from the inclining position, inasmuch as the head, neck, and trunk, as far as the hips, are inclined forwards, while the legs remain in a vertical position. The back is not bent, the shoulders are not drawn forwards, but kept back, and the chest thrown forwards; when we remain long in this posi-

tion, the lower extremeties are slightly arched, the concavity being directed forwards, so that the knees are more than usually flattened.

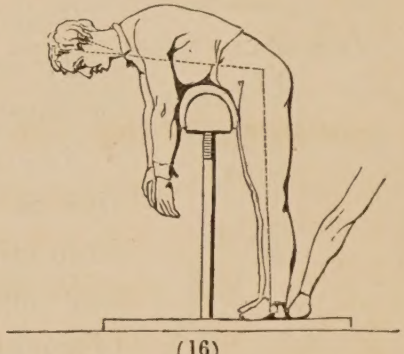
There are also *half* or *fully inclined standing positions*, according to whether the inclination of the trunk forwards is slight, or so considerable that a support is necessary; in the latter case there are the *head, chest, stomach, thigh, leg* and *instep inclined standing positions.*

Crooked-standing (fig. 15), *deep-crooked* (fig 16), *and acute-crooked* (fig. 17) *positions.*

(15)

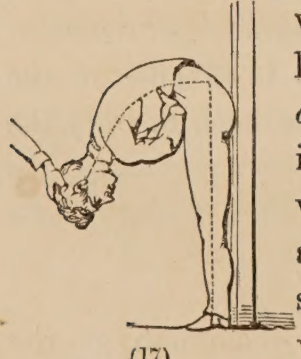
The first (fig.15) differs from the inclined standing position in this, that the body is bent forwards, the shoulders fall forwards, the thorax is pressed in, and the lumbar vertebræ protrude backwards.

When the curvature of the back increases so much, that the trunk and legs form a right angle, of which one line is naturally crooked, in which case the position must be executed over fixed bar, supporting the abdomen, we call it *deep-crooked position* (fig. 16).



(16)

When the curvature is so great that the trunk and the legs form an acute angle, we call it *acute-crooked* position (fig. 17). This last position is generally done in a lean-standing position, with the posterior surface of the legs leaning against a fixed post. A variety of the crooked standing position is the *relaxed-standing* which is like it, except that the action of the muscles is restrained as much as possible in the trunk, throat, head, and arms, in consequence of which all these parts hang down entirely relaxed, in a somewhat forward inclined position; the arms are never kept in wing position.



(17)

Falling positions, falling or fall-standing, reclined-standing, and reclining positions.

For these movements the body is bent *backwards*, as in the inclined and crooked positions it is done *forwards*.

Falling or fall-standing position (fig. 18).

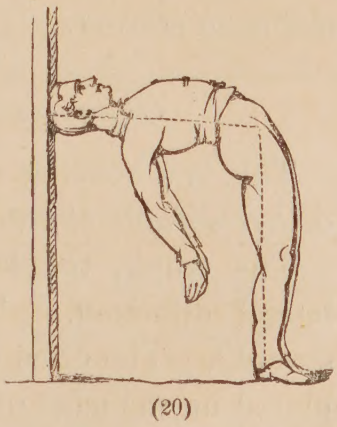
(18)

Is similar to the inclined position, with this difference, that the body is inclined backwards. The *half-falling*, and *fully-falling positions*, are similar to *half*, and *fully-inclining* positions, according to whether the position is kept up with or without support.

Reclined-standing (fig. 19), *and reclining* (fig. 20) *positions.*

(19)

Both correspond to the *crooked-standing* and *deep-crooked* positions. In the *reclined-standing* position the patient bends backwards, in a concave arch, as far as he can without support, or at all events with no more support than leaning the back part of his head against a post behind him, without wanting the assistance of a gymnast. The *reclining position* (fig. 20) consists in so considerable a bending of the trunk backwards, that even the leaning of the head against the post is only possible with the assistance of the gymnasts, who cross their hands on the chine bone of the patient, and thus support him.



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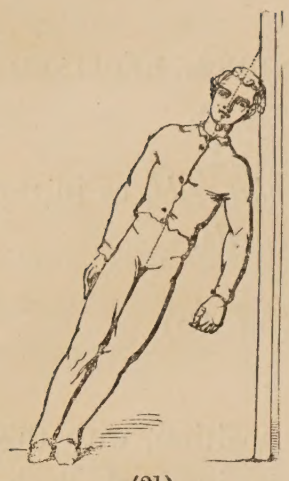
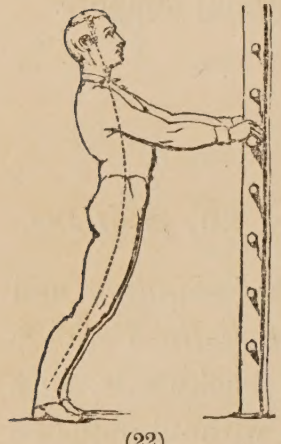


(21)

The patient stands in the *reclined-standing* position, with the heels at least a foot or more distant from the post, and in the *reclining* position, the distance is 3 to 4 feet.

Sideways-falling position (fig. 21). which is also designated, as *right* or *left falling*, consists in an inclination of the whole body, which is kept perfectly stiff on either side; when the inclination is considerable, it is necessary to give a support, in the lateral direction, that the body may not fall.

Opposite, inclined-reclined-standing position (fig. 22).



(22)

This is, as the name implies, a combination of the reclined standing and inclining positions. It is executed by leaning towards a high object which the patient grasps, with his arms extended forwards (*opposite standing position*). The position is *inclined* as regards the lower extremities, which are stretched at the knee joints, and inclined forwards, so that the hip joints are further forwards than the feet, and it is a *reclined position*, as regards the trunk, which is bent in a concave arch backwards. The lumbar vertebræ and the chin are very concave, and the abdomen convex.

Oblique-standing position. (See fig. 11.)

This is a bending of the trunk sideways, and is either *right-* or *left-oblique-standing* position.

The trunk, the head, and neck, are moved in the same lateral direction. The lower extremities remain perfectly straight. The arms either hang down freely, or the hands are placed on the edge of the hip-bone. If the expression *oblique-standing* is prescribed, without the word *right* or *left*, then it means that the patient places himself in two positions, one after

the other, first to one and then to the other side. If the word *right* or *left* is added, it means that the position is oblique-standing only on the side mentioned.

(23)

Turn and twist-standing positions (fig. 23).

The first consists in a turning of the head and neck towards one side without moving the rest of the body, which is in a straight direction (*turn-standing position*). If the body as well as the neck and head are turned it is the *twist-standing position.* If the right side of the head, and the right shoulder come forward, the left side of the head, and the left shoulder backwards, we call the position *left-twist-standing*—or *twist-standing to the left.* If the contrary direction, it is a *right-turn,* or *right-twist-standing* position, or *turning to the right.* If in the prescription there is no addition of "*right*" or "*left*" to the expression *turn,* or *twist-standing,* then two positions are to be executed, one after the other, on both sides; but if "*right*" or "*left*" is mentioned, then the movement is done only in one dircction.

LIMB POSITIONS.

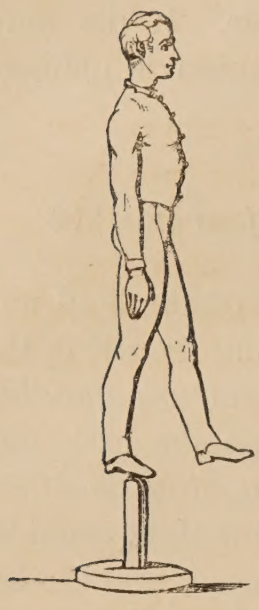
Leg positions.

Half, balancing, air, kick, swing, step, squat, and *jump-standing positions.* In all these positions, the head, neck, trunk, and one leg remain as much as possible in a vertical line, while the other leg changes its position.

(24)

Half-standing position (fig. 24).

In this position one foot is placed with the sole on the ground, while the other leg, perfectly stretched at the knee, is slightly raised, and thrown a little forwards in such a way that it does not touch the floor.



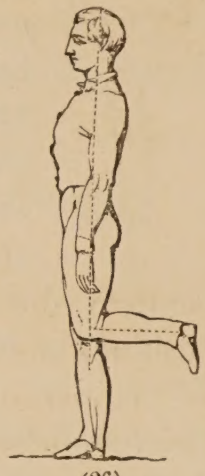
(25)

Balancing or balance position (fig. 25).

This position differs from the half standing only in this, that the straight standing leg does not rest on the whole sole of the foot, but only on the ball, and generally on a small round elevation (balancing post), upon which the patient balances himself.

Air-standing position (fig. 26).

This corresponds to the half standing position, except that the leg which does not touch the ground, is bent at the knee, and the leg and foot directed backwards.



(26)

(27)

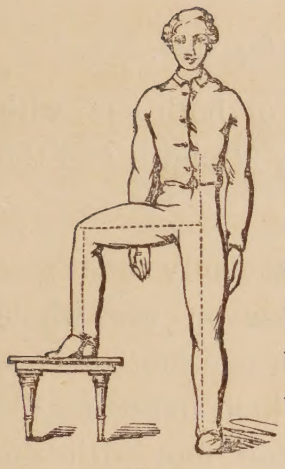
Kick-standing position (fig. 27).

In this position one leg is stretched and placed forwards in such a way, that the foot is about a foot or more from the floor, the joint of the foot is in a position between flexion and extension.

(28)

Swing-standing position (fig. 28).

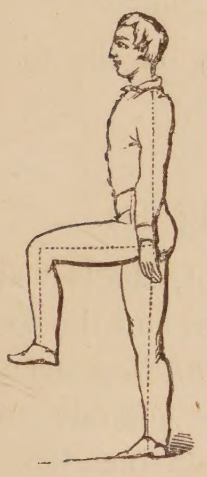
In this position one leg is placed with the foot on the ground, whilst the other leg is stretched at the hip, knee, and foot joint, and directed backwards.



(29)

Step-standing position (fig. 29).

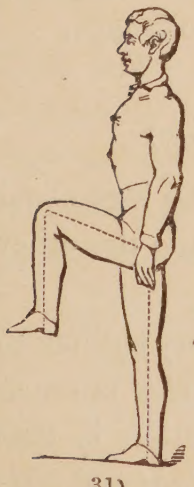
In this position one leg is bent at the knee, and placed on an elevation in such a way, that the thigh and leg form a right angle, exactly sideways to the trunk, kept at the same time in such a direction towards the longitudinal axis of the body, that the thigh forms with it a right angle.



(30)

Squat-standing position (fig. 30).

This position is similar to the *step-standing* position, with this difference, that the knee is not directed sideways, but straightforwards, and the foot has no support, but is kept up solely by muscular power.



31)

Jump-standing position (fig. 31).

This position is similar to the *squat-standing* position, with this difference, that the upper surface of the thigh forms with the longitudinal axis of the trunk, a more acute angle. In all the above-mentioned leg positions, with the exception of the *balance-standing* position, one foot stands with the whole sole on the ground. The names mentioned above, when given in the prescription, always include two positions, because the right or left leg may be raised, while the other is firmly standing.

If these positions are to be executed with one leg, then the word *right* or *left* is placed on the prescription before the name of the position, as for instance, *right-half-standing, right-step-standing, left-squat-standing, left-air-standing, right-kick-standing, &c.*

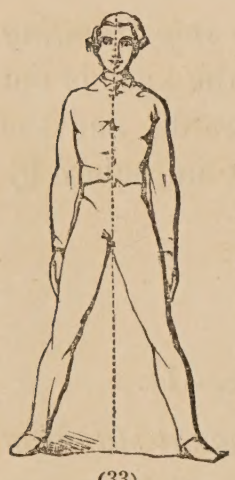
(32)

Toe-standing position (fig. 32).

The patient stands on the toes of both feet, with the trunk and legs kept perfectly straight, and the heels raised from the ground.

Half-toe-standing means, that only one foot remains on the toe, and the other on the whole sole. *Toe-half-standing* is, when one foot touches the floor with only the toe, by which the patient is supported, while he puts the other foot with the extended leg in the *half-standing* position.

Right-toe-standing is, when the right foot is on the toes, while the left is on its whole sole.



(33)

Stride-standing position (fig. 33).

The whole body is kept straight, the feet are placed twelve to sixteen inches apart, and the toes directed outwards. *Half-stride-standing* means, that one leg is kept as straight as possible, and the other is kept twelve to fourteen inches distant from it, the patient rests with the weight of his body, as equally as possible on both legs.

Walk-standing position, and pass position.

The first (see fig. 12) refers to that position of the legs usual in walking, that is, one leg is placed forwards, while the other is placed backwards.

(34)

The pass position (fig 34) is very similar to this, only the distance between the feet is much more considerable, so that the position is that assumed when fencing. There is a *right* and *left-walk-standing*, and a *right* or *left-pass-standing position*, according to whether the right or left foot is placed forwards: without the word *"right"* or *"left"* the position is done with both successively.

(35)

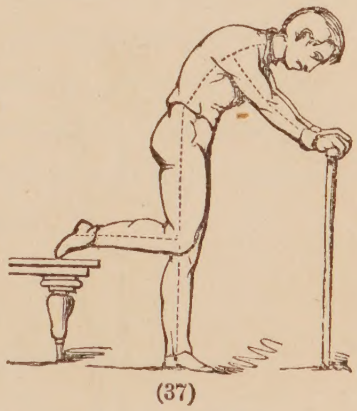
Curtsey-standing position (fig. 35).

The legs are kept with the heels together, the knees a little bent, and directed outwards as far as possible. The legs form consequently nearly a regular rhomb or square. *Half-curtsey-standing* is, when this position is executed with one leg, while the other leg stands straight, and conse quently the leg which is bent touches the floor only with the toes.

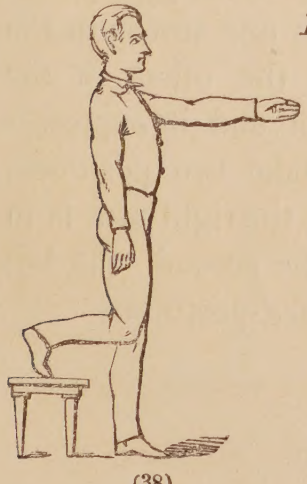
Heel (fig. 10), *foot-edge* (fig. 36), *instep* (fig. (37), *and toe* (fig. 38), *supporting positions.*

(36)

In all these positions, the body and legs remain straight, only one foot is placed on an elevation such as a high cushion, or a low chair, with the heel, or the inner edge of the foot, or instep, or the under side of the toes, resting on it. In all these positions the word *"right"* or *"left"* is used to designate the foot, which serves as a support, as for instance, *right heel-supporting position* means, that the heel of the right foot is placed on an elevation; when this word is omitted, the movement is done with both feet successively. Fig. 37 represents *rack-grasp-crooked-right-instep-supporting position.* Fig. 38 is *left-rack-right-toe-supporting position.*



(37)

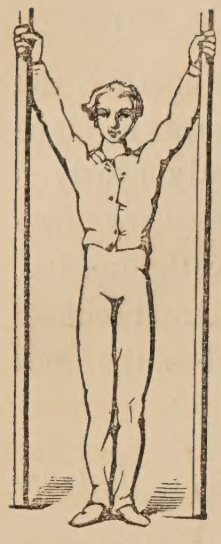


(38)

ARM POSITIONS.

Stretch (fig. 9), *and span-standing positions* (fig. 39).

The arms are raised near the head, parallel with each other, and stretched upwards with the palms of the hands directed towards each other, this is *stretch-standing;* but if the hands are stretched sideways,

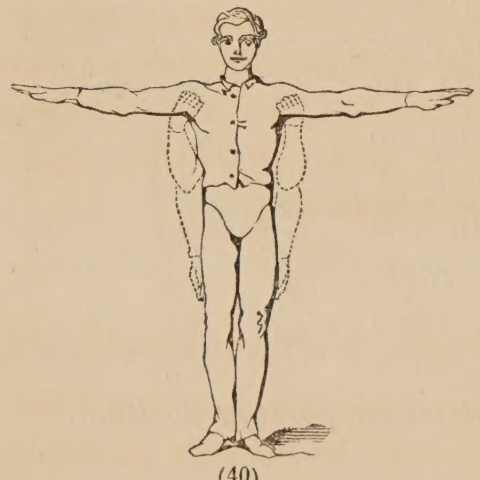


(39)

and upwards, or take hold of two poles, placed on each side of the body, it is *span-standing position*. *Span-lean-standing position* is, when the patient leans with his back against a post, and stretching out his arms grasps a peg which projects right and left from the post. These positions may be executed with both arms, or one alone; thus forming the *double-stretch-standing, double-span-standing, half-stretch-standing, half-span-standing, right* or *left-stretch-standing, right* or *left-span-standing positions.*

The word "*double*" is not generally put on the prescription, but if we wish the position to be executed, first with one, then with the other arm, the word "*half*" is placed before the name, and if only with one arm, the word "*right*" or "*left*" must be used; this is the case with all arm positions.

Yard-standing position (fig. 40).

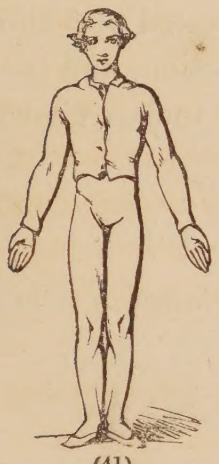


(40)

The arms are extended horizontally on both sides of the trunk, at a right angle with the body, the palms of the hands directed downwards or forwards. There are *half-yard, right-yard, left-yard-standing positions.* The position *stretch-yard-standing* is, when one arm is in the *stretch*, and the other in the *yard* position, and it expresses at the same time, that the patient has to make two positions, one after the other; for instance, in the first the right arm is in the *stretch*, the left in *yard*-position; in the second, the left arm is in the *stretch*, and the right in the *yard*-position.

Yard-grasp-standing position.

The hands are in the *yard position,* and take hold of two poles, fixed at a convenient distance.



(41)

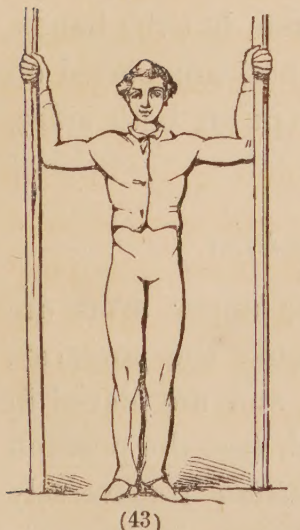
Speak-standing position (fig. 41).

The arms are kept with the palms of the hands directed forwards, but considerably lower than in the *yard position,* so that they form, with the sides of the trunk, an angle of fifteen degrees, consequently the arms are in an oblique direction, outwards, and downwards. *Half-speak, right-speak, speak-yard, speak-grasp standing* are varieties of this position.

(42)

Rack-standing position (fig. 42).

Both arms are raised at an equal height, as in the yard position, but the arms are directed straight forwards, and kept parallel to each other. This position is also called *hand-opposite-standing,* or only *opposite-standing,* or *rack-grasp-standing,* when the hands, which are stretched forwards, grasp a fixed object, while the elbow joint is generally a little bent.



(43)

Heave-standing position (fig. 43).

In the heave-standing position, the upper arms are kept as in yard position, the forearms bent at a right angle, and directed upwards; if the hands take hold, at the same time of two poles, or ropes, on each side of the body, the position is called *heave-grasp-standing position.*

(44)

Shelter-standing position (fig. 44).

The upper arms are kept on both sides of the head obliquely outwards, and upwards, the forearms are bent towards the head, and kept perfectly above it. The hands are directed with the palms upwards, in a horizontal direction, and the fingers towards each other, a few inches above the head.

Flight-standing position (fig. 45).

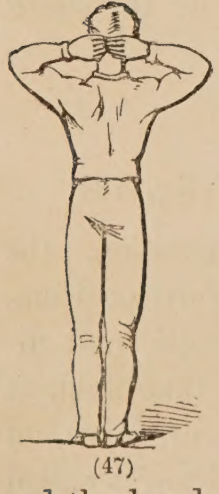
(45)

The upper arms are in the *rack-standing position*, the forearms bent at a right angle, and kept as well as the hands vertically, and the palm of the hands directed towards each other.

(46)

Think-position (fig. 46).

The arms with the elbows bent, are kept outward, so high that the fingers either touch or cover each other, close in front of the forehead, without touching it.



(47)

Rest-standing position (fig. 47),

Is similar to the *think position*, but the hands, which cross, or cover each other, are placed on the occiput, the elbows are kept on both sides, outwards, but not forwards.

Cover and angle position.

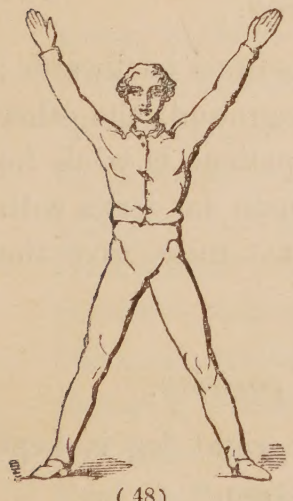
In both these positions the upper arms are placed on the side of the trunk, the forearms and the hands form with them a right angle, and are placed in the *cover position*, transversely on the stomach (see the position of the arms in fig. 63); in the *angle position* transversely on the region of the loins, (see position of arms in fig. 51),

while they cover each other in both cases. If only one arm is in such a position, it is called in the first case, *half-cover*, in the second, *half-angle position*.

Half-rest-angle position, and *half-think-angle position*, designate *rest*, and *think* positions, in which the upper arms are so approached to the head that the elbows are immediately on the back part of it in *half-rest-angle position*, while in *half-think-angle position*, the elbows are very near to the forehead, the forearms, and especially the hands, protrude very far on the other side of the head.

Instances of compound standing positions.

These are distinguished in the following ways: those words are placed first which relate to the position of the arms, then those which relate to the position of the trunk, and finally those which express the position of the legs; the adjective "*lean*" or "*opposite*" is placed before the position, and those words which explain it more circumstantially are put in parenthesis.

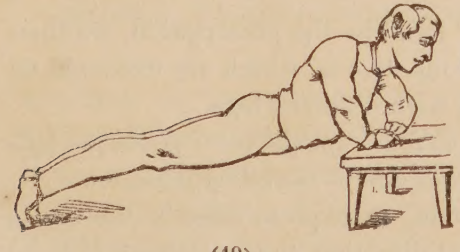


(48)

Star or cross-standing position (fig. 48).

This is a compound of the *stretch*-and-*stride* standing positions; there is only this difference, that the arms are kept a little obliquely up and outwards, so that the body and limbs form a St. Andrew's Cross.

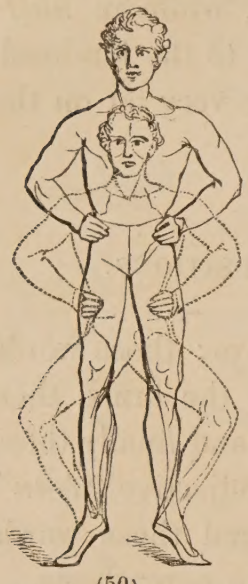
Tumble-standing position (fig, 49).



(49)

The body leans forwards in an inclined, and almost horizontal position, on both arms, bent at the elbows, while the upper arms are directed outwards, as in *yard-position*, and placed in such a way that

the chest protrudes very much. The hands rest on an elevated object, at least twelve or eighteen inches from the floor; the legs are extended, and placed a little apart, and touch the floor only with the toes and ball of the foot. Great attention must be paid to the position of the upper arms, because it is only by so doing that the chest can sufficiently protrude.



(50)

Stride-toe-standing. (fig. 50).

The feet are placed some distance apart, and raised on the toes, the rest of the body is perfectly straight.

Curtsey-stride-standing position.

The feet are placed some distance apart, the knees are turned very much outwards and bent, the rest of the body is straight. (See position of feet and knees, fig. 50, dotted lines.)

Reclined-squat-standing position.

The trunk, with the throat and head, is reclined backwards; one leg is perfectly straight, and rests on the ground, the other is in the *squat-standing* position. If the patient is weak he must be supported by the apparatus, on which he leans with the head or chine, or the hands of the gymnast must give the necessary support.

Right-oblique, left-jump-standing position.

The trunk is bent to the right side, the right leg is kept perfectly straight, the left is in the jump position.*

* If we leave out the word "right" or "left" in the prescription, we then express two, or more properly, four, positions, two of which are executed on one side of the body, and two on the other, with different legs.

The positions would be called *right-oblique-right-jump—left-oblique-left-jump—right-oblique-left-jump—left-oblique-right-jump—standing positions.*

It is therefore necessary in such positions, to express exactly the words "right" or "left," in order to know in what direction the movement is to be done; if this term is omitted, the movement is to be done first on one side

Twist-reclining position.

The body is so far reclined backwards, that it would fall if not supported, either by apparatus or the gymnast. At the same time the trunk is twisted, and as this may be done as well to the right as to the left, this expression specifies that the two positions are to succeed each other, whilst the twisting is made first on one side and then on the other.

Twist-step-standing position.

This position may be done also in four different ways, similarly to the *oblique-jump-standing-positions ;* but generally it is so done that the *twist-position* of the trunk, and the *step* position of the legs are on the same side, so that, with the exception of the leg which stands straight, while the foot is directed outwards, the position is a *squat position.* If the *twisting* is done on one side, and the *step position* of the leg on the other, it is expressed by *right* (or *left*) *twist, left* (or *right*) *step-position.*

Twist, inclined-standing position.
Twist, kick-standing position.
Right-twist, left-kick-standing position.
Right-curtsey-, stride-standing position.
Oblique-, half-standing position.
Half-stretch-, oblique-, step-standing position.
Balance-, step-standing position.
Oblique-, reclined-, air-standing position.
Crooked, swing-standing position.
Inclined-, squat-standing position.
Yard, deep-crooked-standing position.
Stretch, inclining-standing position.

and then on the other, or as in this instance, the position may be executed in four different ways. If we wish to do two of them, the necessary directions are put in a parenthesis, for instance: oblique-jump-standing (right-oblique-right-jump—left-oblique-right-jump) position, that is, the trunk is oblique standing in two positions, first to the right, and then to the left, but in both cases only the right leg is to be placed in the jump position.

Wing, acute-crooked-standing position.

Yard-stretch, fall-standing position.

Think, twist-standing position.

Speak-span, reclining-standing position.

Span-reclined, kick-standing position.

Opposite-, swing-, standing position.

Calf-lean-, stretch-, fall-standing position.

Rest-, thigh-opposite-, twist-, curtsey-standing position.

Span-yard, sideways-fall-standing position.

Left-stretch-, right-yard-, right-twist-, right-walk-standing position.

Half-stretch, foot-support-standing position.

Stretch-, inclined-, heel-support-standing position.

Speak-, twist-, toe-support-standing position.

Span-speak-, grasp, oblique-standing position.

Lean-head-, fall-standing position.

Half-stretch-, chine-lean-, fall-, oblique-, half-standing position.

Opposite-, inclined-reclined-, stride-standing position. (See fig. 18.)

Left-stretch-, right-yard-, right-sideways-falling-, right-half-standing position.

Span-speak-grasp-, standing position.

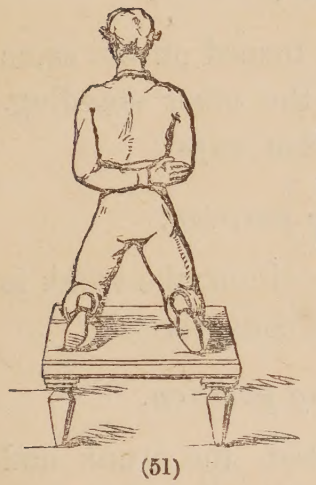
Span-grasp-oblique-standing position.

For the description of these thirty-two compound standing positions, the reader must refer to the description of the single standing positions.

The kneeling or knee positions.

The kneeling positions differ but little from the standing ones: the position of the head, trunk, and thighs is similar to that in the standing position. The compound kneeling—arm—and trunk-positions are also similar to those in the standing.

Instances of kneeling positions.

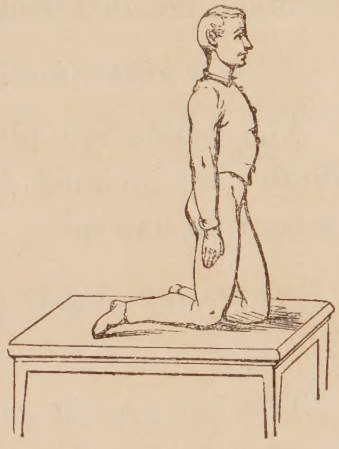


(51)

Stride-kneeling position (fig. 51),

Is similar to the standing position, with the exception of the legs being bent. The arms of this engraving are in the *angular* position.

Walk-kneeling position (fig. 52),

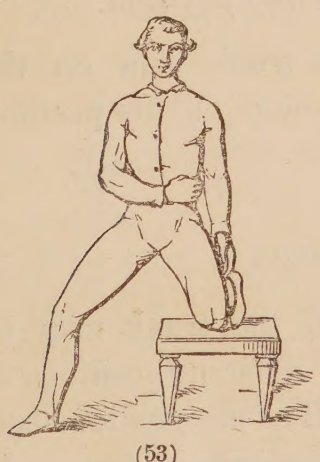


(52)

Is similar to the walk standing, and consists in placing one knee forwards, that is, in advance of the other. The figure represents a *left-walk-kneeling* position.

Half-kneeling position.

For this position only one leg is bent at the knee, and is on an elevated level, while the other leg hangs straight down without touching the floor.



(53)

Half-stride-kneeling-pass position (fig. 53).

This is composed of a standing and kneeling position; one leg kneels on a chair, and is, with the thigh, directed obliquely outwards; the other leg stands on the floor, a little bent at the hip and knee joints, and directed slightly outwards.

Half-kneeling-, half-sitting position.

One leg kneels, the other is bent at the hip and knee joints, and stands, with the foot, on the same level of the chair on which the other kneels.

Stretch-, fall-, walk-, kneeling position.

The patient kneels on both knees, but one is a little in advance of the other, then the trunk and thighs are reclined backwards, while the arms are in *stretch* position.

Half-stretch-, twist-, half-kneeling position.

One arm is stretched upwards, the trunk turned on the same side, the leg of the same side kneeling, the other standing. (This position may be executed in six different ways.)

Stretch-yard-, reclined-, kneeling position.

One arm is stretched, the other in yard position, the trunk is so much reclined backwards that the back is concave.

Think-, inclined-, oblique-, kneeling position.

The hands are placed before the forehead, the trunk and thighs are inclined forwards, at the same time that the trunk is bent on one side.

Left-stretch-, right-yard-, right-twist-, right-walk-, kneeling position.

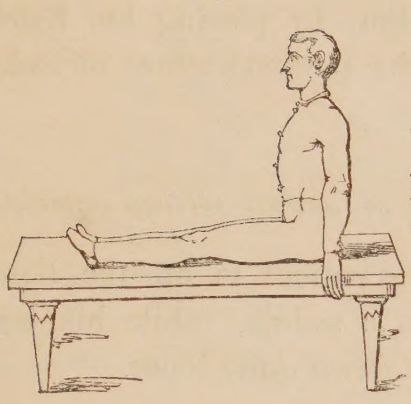
The left arm is stretched upwards, the right stretched outwards, the trunk is turned to the right, and the right knee is placed forwards.

Half-stretch-, sideways-fall-, kneeling position.

One arm is stretched upwards, the trunk bent on the same side but kept stiff, and the legs kneeling. (This position may be executed in four different ways.)

THE SITTING POSITIONS.

In the sitting positions, the arms and the trunk may be placed in similar, and in almost as many different positions as in the standing and kneeling positions. The designations correspond therefore to the names of the standing positions. In general the patient, in a sitting position, is supposed to sit on some support, such as a chair, &c. There are a few exceptions to this rule, as for instance *toe-half-sitting* position (fig. 60).



(54)

Long-sitting position (fig. 54).

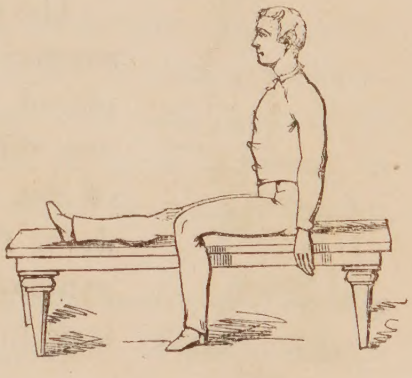
The fully extended legs of the sitting patient rest with their whole posterior surface on the sitting level of the operating chair.

Half-long-sitting position (fig. 55).

One leg fully extended rests on the sitting level, the other is bent at the hip-, knee-, and foot-joints, and stands with the foot on the floor.

Short-sitting position.

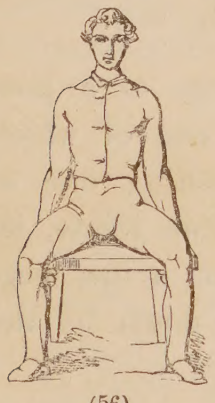
Only the seat of the patient rests on the chair; the lower portion of the thighs are only partially supported. (See fig. 88.)



(55)

Stride-sitting position (56).

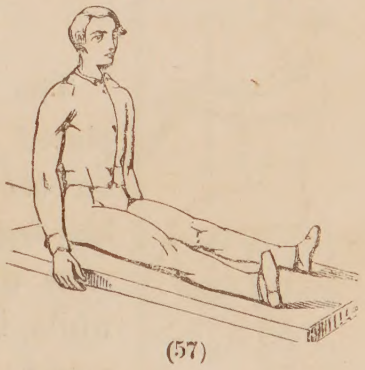
The thighs resting in their whole length on the chair, are some distance from each other; the (lower) legs and feet hang down freely, or touch the floor.



(56)

Long-stride-sitting position (fig. 57).

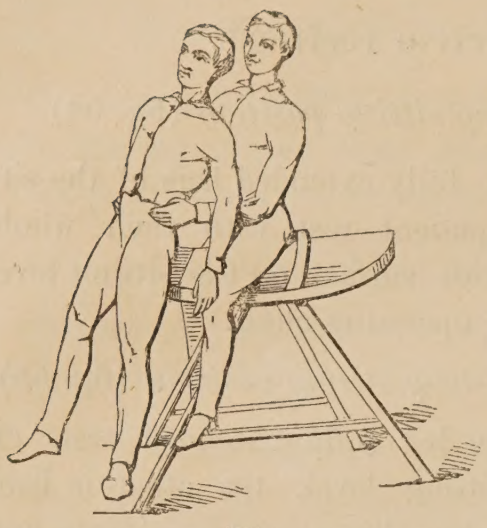
The legs in long sitting position are separated from each other, and at the same time rolled outwards.



(57)

Horse-end-, sitting position (fig. 58).

The patient sits on the end of a wooden horse, his back is directed towards the longitudinal axis of the horse. Be-



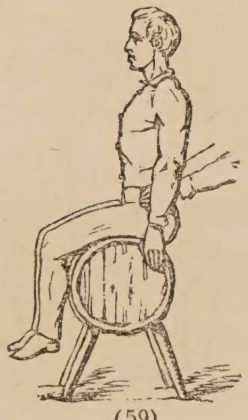
(58)

hind him the gymnast sits on the horse, and keeps him in his position, by placing his hands on the patient's chest or abdomen.

Ride or saddle-sitting position.

The patient is on the horse as in a saddle, while his legs hang down quite loose.

High-, transversal-, sitting position (fig. 59).



(59)

The patient sits transversely on a horizontal support, in such a way that the thighs are placed close to each other, the posteriors on one side, and the knees on the other side of the support, the legs are bent and hang down freely. The patient is assisted by a gymnast standing behind him, in order to keep him in his position.

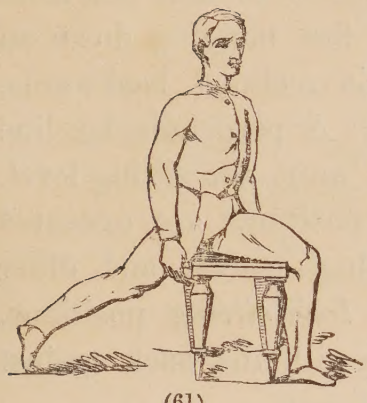
(60)

Toe-half-sitting position (fig. 60).

The patient hangs on the pegs of a post placed at a considerable height, one of which on each side he grasps, and bending one of his legs at the hip, knee, and foot joints, he rests the ball of the bent leg on a low peg, while the other leg hangs freely down by the post.*

* For the convenience of the gymnast who assists in the movement, he must take care that the hanging leg does not touch the ground, and therefore the patient takes hold of a high peg.

Jump-sitting position (61).

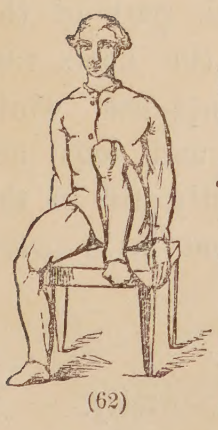


(61)

The patient sits transversely, that is he has the operating chair, on which the movement is generally executed, between his legs, so that one thigh rests with his whole lower surface on it, while the leg reaches down on the side of the chair, and the foot touches the floor with the whole sole. The other leg being turned very much inwards, touches with a few points of its interior and anterior surface only the other side of the chair, and protrudes sideways near it. The back part of the knee and the calf of the leg are turned outwards and upwards, the leg is at the same time inclined obliquely downwards, so that its anterior surface is nearer the floor, and supported by the foot, which rests only with the toes on the floor. The trunk of the patient, in *arch* position, is directed towards the side of that thigh, which is entirely resting on the chair.

If the trunk is turned in such a way that it is directed neither to one nor the other thigh, then the position is called *jump-twist-, sitting-position.* According as the right or left foot touches the floor with the whole sole, we have a *right-* or *left-jump-sitting* position.

Spasm-sitting position (fig. 62).



(62)

The patient sits with one leg in the usual position, he keeps the trunk straight, and bends the other leg very strongly at the hip and knee joints, so that the anterior surface of the thigh almost touches the abdomen, while the foot of this leg is placed on the sitting level near the other thigh. According as the right or left foot is placed in this way, the position is called *right-* or *left-spasm-sitting* position.

Stretch-, fall-, stride-sitting position.

The patient sits astride the couch, close to that end from which his face is directed, the legs and feet hanging down on both sides of the couch. The trunk is reclined backwards, while the arms are stretched upwards. A perpendicular line from the arms or shoulders does not meet the sitting level, but falls clear of it. All *fall-sitting* positions are executed in a similar way, at the edge of the high couch, and differ only in this from the *half-lying* or *lean-sitting* positions, that in these last the trunk always leans with the back against a support.

Right-yard-left-stretch-, inclined-sitting position.

The right arm is in yard-position, and the left in stretch-position, the trunk bends forwards, but is not crooked.

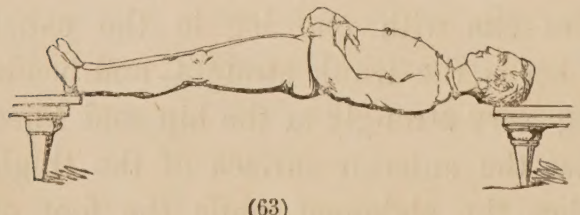
LYING-, OR LIE POSITIONS.

These movements are divided into three classes, namely, the *backwards*-lying, the *forwards*-lying, the *span* or *stem*-lying, positions. Each class might be subdivided into trunk-, limb-, and compound positions. The names of these correspond with those of the standing positions.

FIRST CLASS.

Backwards-lying positions, called also *back-lying,* or simply *lying positions.* The body is lying on the back.

Heel-neck-supporting-, or head-heel-lying position (fig. 63).



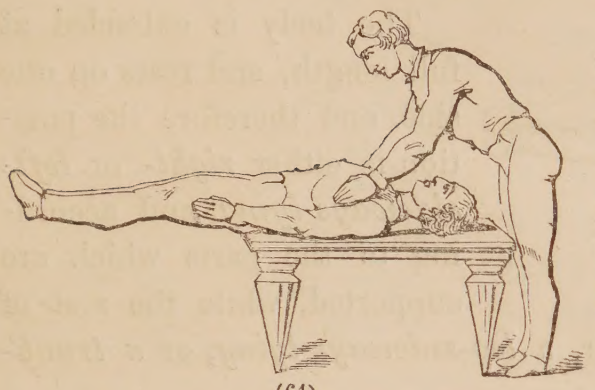
(63)

The back part of the head and the heels rest on firm supports, while the body and legs are kept perfectly stiff in the air; the arms are crossed on the abdomen, that is in *cover position.*

Yard-, head-heel-, lying position,

is the previous position, with arms stretched horizontally.

Trunk-lying position (fig. 64).



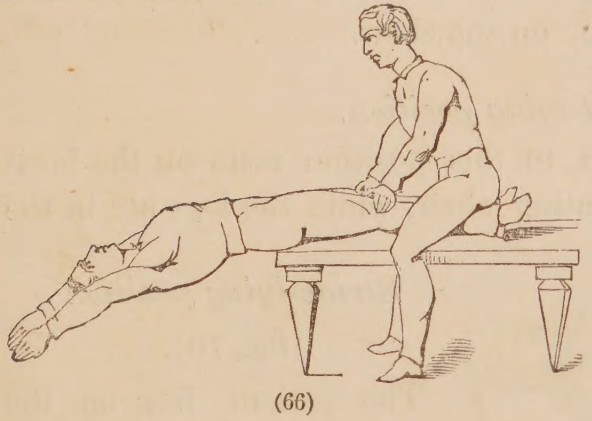
(64)

The head and trunk as far as the pelvis are lying on the posterior surface on a firm support, and are fixed by the gymnast: the legs are kept perfectly stiff in the air, and the arms rest close to the trunk on the upper surface of the couch.

Leg-lying position (fig. 65).

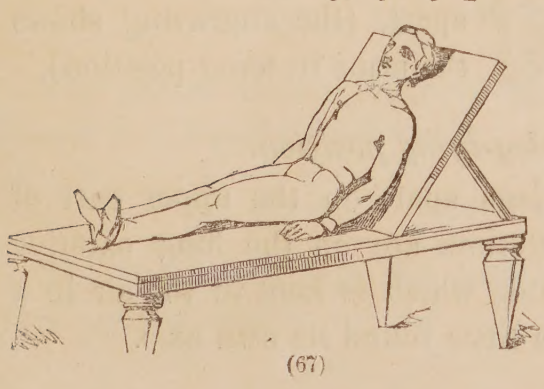
(65)

The lower extremities as far as the hips rest on the couch, the trunk, with the face directed upwards, is kept straight, and without any support: the legs are firmly held by the gymnast. If the patient lowers his trunk a little, so that it forms with the legs an obtuse angle, the position is then called *fall-leg-lying*. If the arms are placed at the same time in the *stretch*-position, it is called *stretch-, fall-, leg-lying position.* (fig. 66.)



(66)

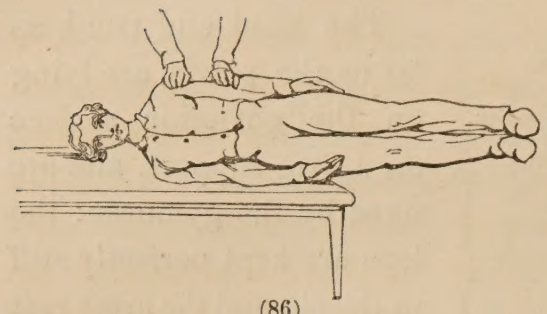
Half-lying position (fig. 67).



(67)

The patient lies with his back on the moveable part of the chair, which is raised so that the head and trunk rest on an oblique, and the legs on a horizontal surface. The whole body forms an obtuse angle with the legs at the hip-joint.

Sideways-lying position (fig. 68).



(86)

The body is extended at full length, and rests on one side, and therefore the position is either *right-* or *left-sideways-lying*, and according to the parts which are supported, while the rest of the body is free in the air, a *leg-sideways-lying*, or *a trunk-sideways-lying position.*

Sideways-half-lying position.

It differs only in this from the *half-lying*, that the body does not rest on the back, but on the side. The flexion of the trunk is more considerable on the high side.

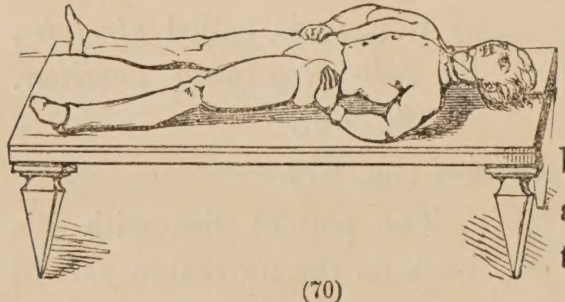
Squat-half-lying position (fig. 69).

(69)

The body is in the *half-lying* position, the legs are bent at the knees, and the feet placed with the soles on a level with the seat on the chair.

Squat-lying position.

The trunk of the patient in this position rests on the horizontal surface of the operating chair, while the legs are in the *squat* position.



(70)

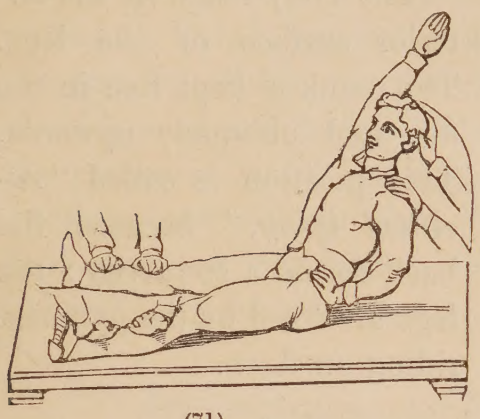
Stride-lying position (fig. 70).

The patient lies on the back, and his legs are placed apart, (the engraving shows the arms in *wing* position).

Twist-, stride-leg-lying position.

The patient lies with the legs apart on the upper part of two operating chairs, the posteriors are on the long exterior edge of one chair, and the trunk, which is kept in the air in a horizontal position, is turned a little round its own axis.

Wing-, stretch-, stride-half-lying position (fig 71).



(71)

One arm is in *wing-*, the other in *stretch* position, the feet placed apart, and resting in their whole length on the couch, while the body in *half-lying* position is supported by a gymnast. The figure represents *left-wing-, right-stretch-, stride-half-lying position.*

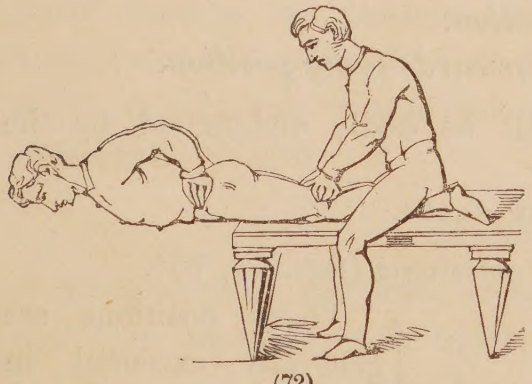
SECOND CLASS.

Forwards-lying-positions.

In all these positions the body lies on the anterior surface.

Forwards lying position.

The whole body lies with the anterior surface on the chair, and for his comfort the patient places his arms crossed in front of the chest, and raises his head a little.



(72)

Leg-forward-lying position (Fig. 72).

The legs as far as the hips rest on the couch, the trunk is kept free in the air, the legs are firmly fixed, for which purpose a gymnast rides on them.

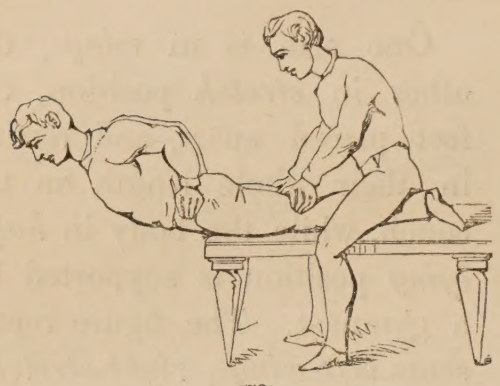
Inclined-, leg-forward-lying position.

The patient instead of keeping the trunk perfectly straight, lowers it obliquely downwards.

Trunk-forwards-lying position.

The trunk rests with the anterior surface on the couch, the legs are kept stiff in the air.

Reclined-, leg-forwards-lying position (fig. 73).



(73)

The body rests on the anterior surface of the legs. The trunk is kept free in the air, and obliquely upwards. This position is called "*reclined lying,*" because the back forms a concavity: the legs are fixed by the gymnast riding on them.

Stride-forwards-lying position.

The patient lies with the whole anterior surface of the body on the operating chair, while the legs are placed apart.

Stride-leg-forward-lying position.

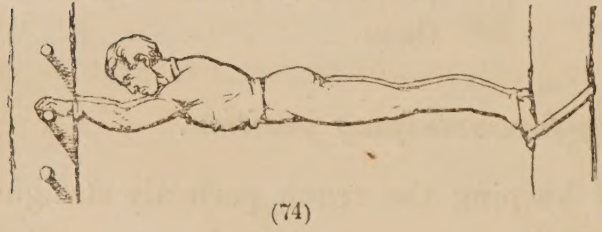
This is the same as the previous one, with this difference, that the trunk hovers freely in the air, and only the legs rest on the chair, and are fixed by the gymnast.

Stretch-yard-, reclined-, leg-forwards-lying position.
Right-oblique-, leg-forwards-lying position.
Stretch-, curtsey-, trunk-, forwards-lying-position.
Squat-, forwards-lying-position.
Half-stretch-, twist-, leg-forwards-lying-position.

The last five positions will be easily understood by the previous descriptions.

THIRD CLASS.

Span and stem-lying positions (figs. 74, 75).



(74)

(75)

These positions are generally executed in the span-frame, the whole body is suspended in the air, the hands of the stretched arms of the patient take hold of one of the pegs on each side of the post, while the feet are thrust

against the other post, and placed in a concavity to prevent them slipping, or in a strap constructed for that purpose. The gymnasts stand generally near the hips and abdomen of the patient, which they support either with their hands, or shoulders placed beneath him. By these means the body of the patient is raised more upward, and the *span-lying* position becomes a *stem-lying* one; that is, the patient stems towards both parts of the frame. This last position (fig. 75) is in general easier to be executed, and the patient has a surer hold.

Arm-half-stem-, leg-half-stem-lying positions.

The patient lies in the span-frame in the manner above described, he holds himself up either with one arm (*arm-half-stem-lying*) or with one leg (*leg-half-stem-lying*), and stretches the other arm or leg in the air. The position of the arms can also be designated as *stem-stretch*-lying, or *stem-yard*-lying position, according as the arm which is free is in *stretch-* or *yard*-position. By the addition of the word *"right"* or *"left"* to the word *stem,* or to the words *"yard," "stretch,"* the arm which remains in the spanning frame, as well as that which is in the air, may be easily denoted. The expression, *"leg-half-stem,"* includes two positions, because the right or left leg may be stemmed or kept in the air. One leg is generally kept in a stride position, and we can then say *right-stride-*, or *left-stride-stem-lying* position.

Instances.

Right-stretch-, half-stem-lying position.—The left arm, and both legs, are in the span frame.

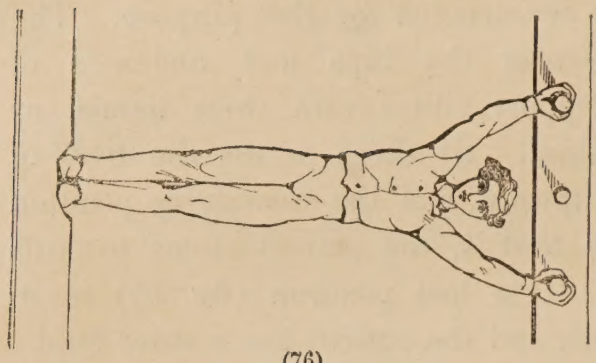
Left-stride-, half-stem-lying position.—Both arms and the right leg in the span-frame.

Right-yard-, left-stride-, stem-lying position.—Left arm and right leg in span-frame.

Right-arm-, half-stem-lying position.—Right arm and both legs in the frame, left arm hanging down freely.

Right-leg-, half-stem-lying position.—Right leg and both arms in the frame, left leg hanging down.

Stem-sideways-lying position (fig 76).



(76)

The patient lies in the span-frame, so that with one hand he takes hold of a high peg, and with the other hand of a low peg on the same side of the post, the legs are lying upon each other sideways, so that one side of the body is directed upwards and the other downwards. According to the side which is up, we call it a *right-* or *left-stem-sideways-lying* position.

Arch-lying position.

This is a *stem-position,* in the span-frame, in which the anterior surface of the body is convex, and directed up, the posterior side of the body down, and concave.

Star-stem-lying position (fig. 77).

(77)

This position is done on a double ladder, while the feet are stemmed on a fixed object, at the necessary height. Two gymnasts bring the ladder within reach of the patient, who takes hold of one of its lower rounds, with both his arms kept obliquely outwards (*star position*): the ladder is now slowly removed, so that the patient, who was previously *crooked-standing,* gradually comes into a lying position. When the ladder is so far removed, that the posterior surface of the patient is scarcely at all arched, then the gymnasts place one of their feet before the ladder, and keep it immovable.

HANGING OR HANG POSITIONS.

The body of the patient hangs freely in the air, generally by the hands, taking hold of a fixed object, but sometimes by other parts of the body.

Span-, stretch-, or simply hanging position.

This has been already described as the fifth principal position. The body is allowed to hang down from a beam, or from two ropes, distant from each other a little more than the width of the shoulders of the patient; if the palms of the hands are turned towards the face of the patient, we call it *in-hanging*, and if the palms are in a contrary direction, it is called *out-hanging;* the arms are either in *span-grasp* or *stretch-grasp* position.

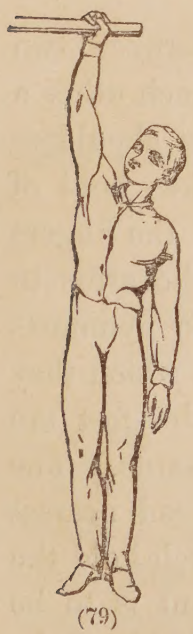
(78)

Roof-hanging position (fig. 78).

The hands take hold of a narrow object, for instance, a rope or a vertical pole, so that the fingers of both hands touch or cross each other.

Heave-hanging and yard-hanging positions.

These two positions are similar to the *heave-grasp-standing* and *yard-grasp-standing*, with regard to the position of the arms, and differ only in the hanging position of the trunk.



(79)

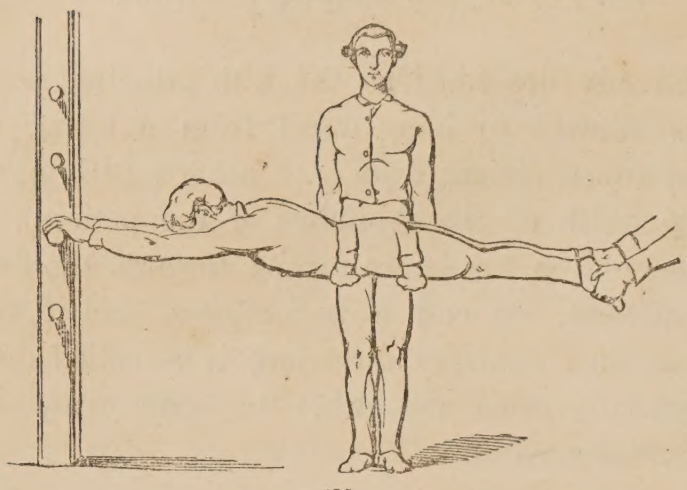
Half-hanging position (fig. 79).

The patient hangs only on one fully stretched arm, while the other hangs down freely at the side of the trunk.

Walk-hanging position.

Both hands of the patient take hold of a horizontal bar on the two sides, and such a distance from each other, that the arms imitate the position of the legs when walking: according as the right or left arm is the anterior one, we have a *right-*, or *left-walk-hanging position.*

Swim-hanging-position (fig. 80).



(80

The patient grasps a peg on each side of the post, at a moderate height, the gymnasts raise his legs, which they support, as also the pelvis, and bring the body of the patient almost into a horizontal position, but with the legs a little depressed: the patient is nearly in the position of a man swimming; besides the gymnast on the right of the patient, the engraving shows the arms of a second gymnast who is on the left of the patient, and the arms of a third who supports the feet.

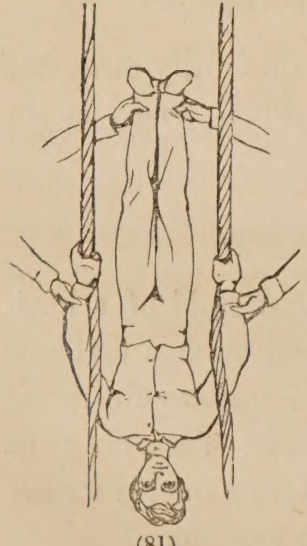
Stretch-swim-hanging position.

The patient hangs only by one arm, while the other is in *stretch-position.*

Yard-, swim-hanging position.

The patient hangs by one arm, while the other is in yard position.

Tumble-hanging position (fig. 81).

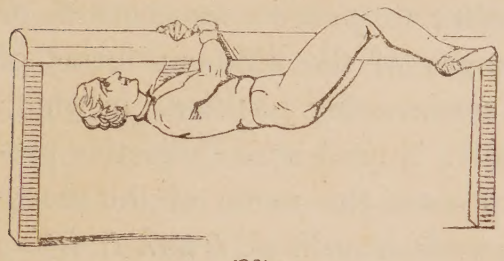


(81)

This position is executed between two ropes, which are distant from each other a little more than the width of the shoulders of the patient; the patient takes hold of two ropes, in such a way that the fingers are directed downwards, and the arms in the corresponding position; two gymnasts take hold of the arms and legs, which they put in such a position that the feet are uppermost and the head downwards. The patient is therefore with the head nearest to the floor, and the hands, which hold the ropes, are the points of support. If the movement is to be executed with ladies, the female gymnasts take hold of the

dress, at the same time that they take hold of the ankles, in order to raise the patient into the necessary position.

Bar-hanging position (fig. 82).

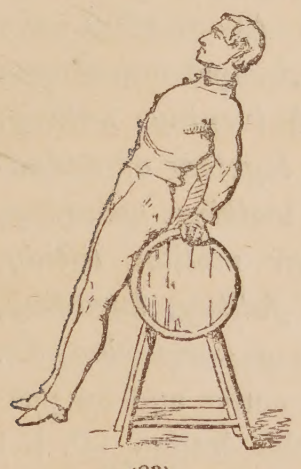


(82)

The patient clasps with his arms, and either with one or both legs, a horizontal bar, in such a way that his body hangs in a horizontal position, face upward.

Equally-, unequally- or obliquely-forwards, and backwards rocking position.

The two first positions are executed on a frame fixed horizontally, of which the two longer sides can be shifted higher or lower, or more distant from each other. *Equally-rocking position* is the hanging of the patient, supported by both his arms, placed on two horizontal poles equally high; if the poles are at a different height, the *unequally-*, or *obliquely-rocking position* can be executed. If the patient hangs by his hands, placed on the front and back of the wooden horse, in such a way that his face is directed to the horse, it is called *forwards-rocking;* if the face is turned in an opposite direction it is called *backwards-rocking position* (fig. 83). According to the hand which is the higher, there is a *right-* or *left-oblique-rocking position.*



(83)

Leg-walk-, walk-hanging position.

One leg is placed in the *walk-standing* position, and one hand in the *walk-hanging. Right-leg-walk-, left-walk-hanging position,* signifies that the right leg and left arm are placed forwards.

Roof-, left-oblique-, left-stride-hanging position.

The patient is in the *roof-hanging position,* and bends the trunk to the *left,* his right leg hangs straight down, while the left is kept sideways, and obliquely outward, so that only this is in the *stride position.*

The *commencing positions* are themselves used as *movements*, in which case they are called *postures*, but in general they are combined with *half-active* or *passive movements*, or compositions of both. The names of the different forms of movements are made up of the *commencing positions* in which the movement is to be done, which is used as an adjective preceding the substantive that expresses the name of the movement, as for instance, *stretch-stride-standing-, trunk-twisting "stretch-stride-standing,"* indicates the commencing position, and *"trunk-twisting"* indicates the movement itself. There are more than thirty different movements, but as they can be executed by different parts of the body, they receive particular designations accordingly, and consequently their number is very large. Further, as the movements of the different parts may be executed in the majority of positions, the number of possible movements is not easily ascertained. About 2500 have already been collected. The names of the principal movements are *flexion, extension, felling, twisting* and *turning, pulling, pressure, separation* or *abduction, bringing together or adduction, guiding, curtseying, posture* or *holding, walking, spanning, rolling, swinging, flying, pumping, angular motion, lifting, overturning, balancing, stroking, sawing, falling, kneading, shaking, pointing, tapping, chopping, knocking, percussion,* &c. Most of these names are used both for half-active and for passive movements, and on the prescription the letters (P. R.) signify that the patient resists, and the gymnast makes the movement; and (G. R.) that the gymnast resists, while the patient makes the movement. The letters are placed in a parenthesis, in order to distinguish the movement as a *half-active* one. By the addition of the words *"active"* or *"passive"* is shown how the movement is to be executed. Those movements which are always *passive*, need no addition to express their form. The *half-active* movements are generally done three times successively, and in case the name of the position implies the possibility of doing it in two directions, as for instance, *twist position* (*to the right and left*), then the movement is done three times in one position, and three times in

the other, altogether six times. The passive movements are generally done fifteen or twenty times, or more, and repeated at very short intervals. The *half-active* movements are done daily once; the *passive* movements may be done several times a day; the *half-active* and *passive* movements are also used together, and form the *compound* movements, in which sometimes the *half-active* is the principal movement, and the *passive* the accessory, and sometimes the contrary.

Not being able to enter into the details of all the movements, I must restrict myself to the description and illustration of some of them, and I will choose those which occur in the prescriptions for certain cases mentioned in the sequel, and which show the extensive field opened by Ling's genius.

I have mentioned before, that Ling described the surgeon as an *armed gymnast*; I may add, that every gymnast is an *operating surgeon*, who has this advantage, that the operations he performs without a knife, are applicable to the cure of not only external, but also internal complaints, and that the patient, instead of dreading the operation, desires its repetition, especially if, as is often the case, he experiences a feeling of improvement resulting from the first operations.

Instances of the way the assistant gymnasts are placed.

As the gymnast assisting in the operation must assist correctly during the operation, so as to fix the different parts of the patient exactly in the prescribed way, I will endeavour to describe some instances in what manner the hands of the gymnast are placed on the various regions of the body, as seen *e.g.* in fig. 84. On the head, the hands are placed immediately above the ear. The gymnast being supposed to stand on the left of the patient, and to resist in the *right-head-flexion* (*G.R.*), or to pull in the *left-head-flexion* (*P. R.*) *Right-head-flexion* (*G.R.*) means that the patient who is placed, for instance,

(84)

in *stride-standing position* (see fig. 33) bends the head to the right, while the gymnast, standing with his face towards the left side of the patient, resists.

Left-head-flexion (*P. R.*) signifies that the gymnast, standing as before, pulls the patient's head to the left, while the patient resists. In both the movements, the hands are placed in the same way, and the right forearm of the gymnast rests on the upper part of the patient's left shoulder, though this is not shewn in the figure. On trying the movement with another individual to act as gymnast, you will feel that in the *right-head-flexion* (*G. R.*) the flexors on the right side of the head assume gradually the highest degree of contraction, while in the *left-head-flexion* (*P. R.*) the same muscles are put into a state of extension, and a feeling of strain is produced.

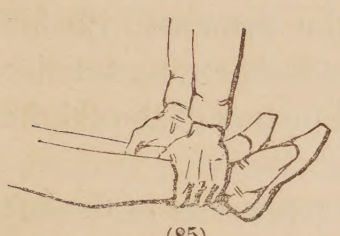
In the same figure (84) is seen upon the patient's right shoulder, the right hand of a gymnast supposed to stand behind him (the left hand on the left shoulder is not shewn in the figure.) This position serves to fix the shoulder, and is required, for instance, in *walk-movement on the spot*, (*G. R.*), where the patient raises alternately the right and left knee, as if walking, but places his foot down again on the same spot it stood on before, the gymnast pressing on both shoulders.

In the right armpit of the same figure is seen the left hand of a gymnast, supposed to stand in front of the patient, in the *commencing* position of *standing-trunk-right-flexion* (*G. R.*), where the patient bends his body to the right, while resisted by the gymnast, or in *standing-left-trunk-raising* (*P. R.*), where the patient, who is in *right-oblique* position, (as in fig. 11) resists, is to be raised by the gymnast.

A little above the patient's right elbow, is the right hand of a gymnast, supposed to stand behind the patient, as, when the gymnast wishes in the movement *wing-standing-, arm-back-guiding* (*P. R.*), to bring the elbow backwards, while the patient resists, or in the movement *wing-standing-, arm-forwards-guiding* (*G. R.*) when the gymnast resists, while the patient brings the elbow forwards, with his hands on the hips.

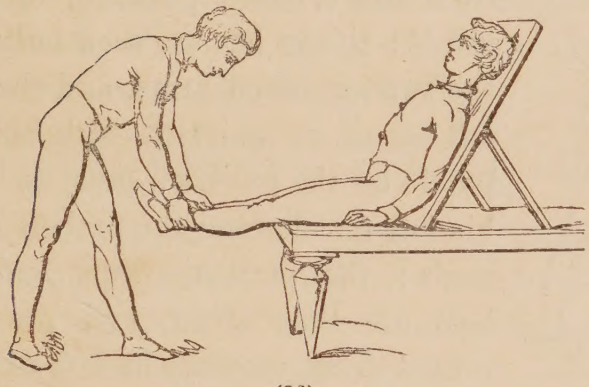
To derive any advantage from this paper, the reader should imitate the described or illustrated positions and movements,

and he will soon find that the greatest exactitude is necessary in order to produce the desired effects, and he will be conscious from his own sensations of the various effects produced.



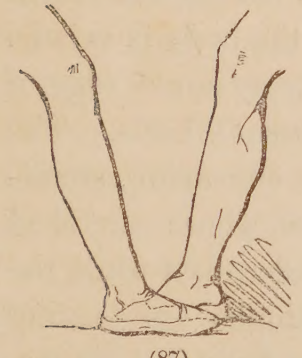
(85)

Fig. 85 exhibits the gymnast taking hold of the patient's legs above the ankle-joint, while the patient in a *half-lying* position, wishes to separate the stretched legs which protrude beyond the couch, as done in the movement, (fig. 86) *half-lying-leg-separation* (*G. R.*), where the patient separates his legs while the gymnast resists, or in *half-lying-leg-adduction* (*P. R.*), where the separated legs of the patient are to be brought together by the gymnast, while the patient resists.



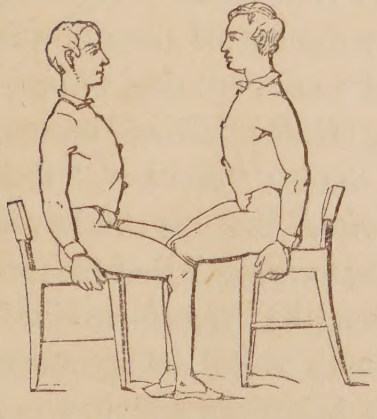
(86)

It is often necessary for the gymnast to resist or assist with his knee or feet. Fig. 87 is an instance of the latter, where the right foot of the gymnast, placed on the outside of the patient's left foot, which is dotted, prevents it from sliding outwards.



(87)

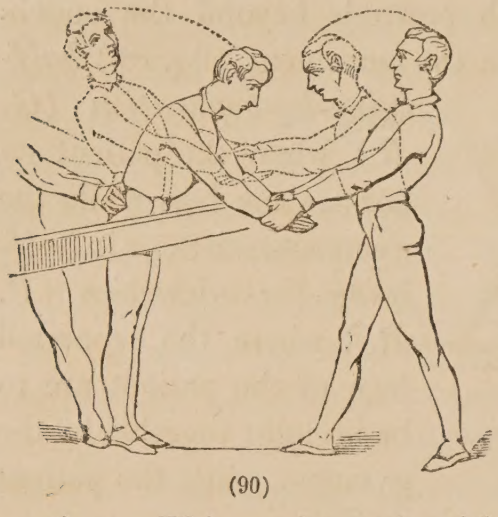
The person to the left is the gymnast, (fig 88), who with the inside of his knees and legs presses on the outside of the knees and legs of the patient during the movement. *Arch-short-close-sitting-, knee-separation* (*G.R.*) The word *"arch"* signifies that the patient's chest is vaulted, and protrudes forwards, while the spine is as upright as possible. *"Short"* signifies that he is sitting with only a part of his thighs on the chair: and *"close,"* that the



(88)

(89)

feet are placed together as in the diagram, (fig. 89), where the inner sides of the feet touch each other; *knee separation* indicates, that the knees are to be separated, while the gymnast with his legs resists. In this movement, the patient feels strong activity of the abductors of the thighs, while the abductors of the thighs of the gymnast are continually resisting.



(90)

Fig. 90 represents to the left the patient, who raises the body from the *crooked* position, upwards; to the left are seen only the two stretched arms, and the left leg of an assistant, with his hands on the patient's hips, and his left foot behind the patient's heels; the patient's hips and legs are thus fixed, and prevented from moving in any direction. This assistant is with his body in *left-twist-, stride-standing position*, that is, the left side of his left leg is directed towards the patient, while the upper part of the body is twisted to the left, and his feet placed apart, as the external edge of the left foot must be placed against the patient's heels. The operating gymnast, seen on the right of the engraving, stands in a *right-pass* position before the patient, of whose stretched arms he takes hold above the wrist-joints, and resists while the patient—whose feet are closed, while his thighs are leaning against a transversal padded-bar, and whose body is bent forwards—raises his body, and even bends it a little backwards, as shewn on the left of the engraving by the dotted lines of the patient's body. This movement is called *rack-, crooked-, thigh-opposite-, close-standing-, trunk-raising* (*G.R.*) "*Rack*" means, that the patient's arms are stretched forwards; "*crooked,*" that his body is bent forwards; "*thigh-opposite,*" that his thighs are leaning against some fixed object; "*close-standing,*" that his feet are touching each other in their whole length; "*trunk-raising*" (*G. R.*), that the patient raises the body while the gymnast resists; but if we wish the gymnast to bring the patient from

the reclined position again forward, while the patient resists, the name would be *rack-, reclining-, thigh-opposite-, close-standing, trunk-forwards-flexion* (*P. R.*) Those who would like to try this movement, can use the back of a chair, covered with a pillow to prevent the thighs from being injured; the assistant remains immovable in the commencing position, and the operating gymnast must move only in the bend of the back, while his feet remain fixed, and his stretched arms, move as the body moves; the person representing the patient must keep the arms and hands constantly stretched, the chest constantly arched. Persons trying this movement should change places, at one time acting as operating gymnasts, at another as patients.

Effects of scientifically applied gymnastics.

With regard to the effects and indications of the movements, I must refer the reader to my works already published, and would here only point out, that the principal parts besides the muscles, tendons, ligaments, joints, &c., on which we can act by movements, are the nerves and the blood. In all *half-active* movements, the influence of the will is increased, more nervous fluid is conveyed from the brain and medulla oblongata to the various groups of muscles which we wish to act upon, the nervous filaments conduct the nervous aura more freely, and consequently additional stimulus is communicated to the capillary circulation, which is always slow and deficient where the patient is wanting in nervous energy. It is a prevalent idea among the profession, that gymnastics act only upon the muscles; it is forgotten that muscular action is accompanied by increased function of the sensitive and motory nerves, by considerable changes in the arterial, venous, and capillary circulations; that the various tissues enclosed in and surrounding the muscles, as well as the points of origin and insertion of the muscles, are influenced in a greater or less degree; changes take place even in the periosteum and bones. The *passive movements* supply a desideratum in all those cases, where the will has no influence on the parts to be acted upon, or where this influence is prevented by dynamical, mechanical or other causes. We must consider the movements as means of deve-

loping the vital reaction of the individual, of increasing nervous action in one part, and of diminishing its excess in another, as the accumulation of nervous action in one part, is always accompanied by deficiency in another; the movements are means of bringing the blood from one part to the other, without any loss of quantity to the organism : if necessary, the animal heat may be increased generally and locally, by increased capillary action, and with the best effect to the rest of the organism. The passive and half-active movements, performed on the patient by healthy persons, undoubtedly influence, not only by the local mechanical action, but also by a vital dynamical agent, transmitted from the healthy to the patient. The various movements produce their peculiar sensation, as giddiness, nausea, fulness, and congestion to various organs, different pains, &c., and if continued beyond measure, there result many morbid symptoms. This is a subject which I cannot here go into, but which would tend to explain the astonishing cures performed by movements, and to which I hope more attention will be paid by the profession, as there is at present an increasing disposition to apply medical science to the prevention, among the working classes, of many diseases, resulting from their occupations, protracted injurious positions and movements, &c.

Diseases in which medical gymnastics are to be used.

The chronic diseases in which the movements are used, either as the sole means of cure, or in combination with other remedies, are the following : deformities of the spine and joints, chicken breast, contraction, distortion of the limbs, ruptures, especially the inguinal and umbilical ruptures, chronic bronchial catarrh, tuberculosis in its first stages, bad digestion, flatulency, constipation and diarrhœa, colics, piles, qualitative and quantitative disorders of the menstruation, anæmia, want of colouring substance in the blood, accompanied by chronic headache, and other symptoms of deranged circulation, mesenteric disease, and in general scrophulous affections in their various forms, all kinds of what we call nervous affections, spasms, incipient paralysis, hysteria, hypochondriasis, in continentia urinæ in children, all diseases which are accompanied by coldness of hands and feet, chronic gout and rheumatism,

consumption, diseases of the heart, with regard to which, Froriep, in a paper on the Treatment of Chronic Diseases by Movements, expresses himself in the following way:—

"In diseases of the heart, cautious, and well-applied muscular exercise must be of considerable use; I do not mean active gymnastics, because every violent effort increases the action of the heart, and consequently the morbid symptoms. By the almost fatal inactivity of the muscular system, which is frequently observed in heart disease, the patient becomes still weaker, the vital process in the peripheric parts diminishes, and the predisposition to internal congestive states, and exudations is increased by the irregular circulation; while on the other hand, a suitable development of the peripheric muscles, and better circulation in the external parts, would prevent or retard the congestions which threaten the internal organs in consequence of the mechanical obstacles present in these diseases. There is no doubt that passive gymnastics, based on anatomical and physiological laws, and directed with the necessary caution, and in certain cases, perhaps also some active exercises, would certainly contribute more to render the circulation uniform, than digitalis, nitre and iodine, endowed as they are, in the eyes of the profession, with magical powers."

Neumann mentions also morbus Brightii and dropsy, chronic ulcers of the stomach and bowels, chronic inflammation of the membranes of the eyes, chronic diseases of the corpus vitreum and the retina, epilepsy, chorea, and mental diseases, (as long as the patient will apply himself to gymnastics) as belonging to the disorders, which may be improved by medical gymnastics. In the asylum at Vienna, Ling's medical gymnastics have been introduced by order of the government. The introduction of this system into hospitals, and the use of gymnastics during convalescence after various acute diseases, would prevent many relapses, and enable the patient, immediately on leaving the hospital, to return to his usual occupation, often stronger than before his illness. Marasmus senilis, and the morbid symptoms accompanying old age, may be very much retarded, and very often prevented, in the same manner as the diseases to which constitutionally weak infants and youths are predisposed. In asylums for idiots, the use of the old gymnastics is already

appreciated, but the importance of Ling's ideas is not yet recognized, but I am happy to say that Dr. Guggenbühl's repeated visits to my institution, have given me an opportunity of inducing him to try the system, in his institution on the Abendberg. In institutions for the deaf and dumb, and especially those for the blind, rational gymnastics should become a necessary branch of education, especially as the dumb are obliged to express their ideas by movements, and as the blind, through their unhappy state, are too frequently disposed to many diseases. I cannot close this paragraph without the following quotations from Dr. Jaeger's *Gymnastics of the Hellenes,* and from Dr. Melicher's *Second report of his Medico-Gymnastic Institution.*

"Well regulated gymnastics are the best and indeed the only real and natural remedies of the human organism. On observing a human body gymnastically developed, what an excellent architect does the art of gymnastics appear. The frame-work is firm, manly, square built; the bones compact, and hard, in material and texture; the spine upright and built concave; the chest rises free, strong and arched; the head is thrown back, resting on the proud towering neck, and exhibits the outline of a noble looking profile, beaming with spiritual expression; thus gymnastics not only proves the best architect with regard to the frame-work, but also by its chemical and plastic influence on the tendons, vessels, and humours, gives strength, durability, and manliness. The tendons and muscles become dense, elastic, and swell powerfully; their action and movements betray the highest power and tension; the whole organism is full of life and energy, and the fatty mass produced by relaxation and inactivity nowhere exists. The ligaments of the joints are kept in a state of perfect mobility and elasticity, and are at the same time strengthened so that there results the highest degree of dexterity, accuracy and decision in the movements of the body, and the most admirable power of persistence during fatiguing exertions; the skin becomes firm and fitted to protect the body from injuries, from too violent perspirations, and from disease; the blood becomes thoroughly mixed and actively circulated, by which the vital warmth is increased and

the dead venous blood removed; the nerves are invigorated, rendered less sensitive to external impressions and stimuli, and are thus in their vital manifestations completely under the influence of the will; all the internal vessels are strengthened, developed, and rendered capable of great vital activity and energy, by the condition of energy and vigour with which the body generally is endowed; the senses are invigorated, the bodily wants, requirements, and impulses are simplified and made more subservient to a free and independent will. The effect especially on the sexual organism is worthy of deep and earnest attention; this being the latest of the bodily developments, is always liable to be more precarious and to be wrongly directed in proportion as the body is little exercised and the nerves become more weak and irritable from the want of a vigorous development of body. Gymnastics are here the most powerful and indeed the only means of preventing the bodily and mental ruin which hence originate."

"Gymnastics restore lost health and strength, and improve it when restored; give to the body the capability of long continued labour and exertion, prevent the premature advent of old age, protect the body against disease, and enable it to overcome such disease when contracted. The natural powers are roused, and the whole body kept in a state of permanent strength; and where the strength has from any cause failed, that vital warmth which is prepared within, finding its way to the exterior, endues the joints with new force. It is therefore to be regretted that many persons have such erroneous views and prejudices about medical gymnastics as to believe that to children, weak persons, the paralytic, and those who suffer from chest complaints, medico-gymnastic treatment is less suitable than any other; such persons evidently decide upon a subject, which they do not understand, on a system which they have neither examined nor practised, and the effects of which they have not felt; they are recommended practically to test this system before giving an opinion."

CASE.—*Complete insensibility of the skin, fits similar to epileptic, and congestion to the head.*

Miss * * * 23 years old,* was always more or less ailing, and disposed to hysteric laughing, or crying: although the catamenia appeared at the proper age, they were rather scanty. About the month of June 1853, she suffered some slight agitation, and this was believed to have brought on a course of the most violent fits, with loss of consciousness, contractions, extensions, and contortions of the arms and legs, as well as of the trunk, lasting from a few minutes to a quarter of an hour. After eight months of suffering, this young lady was sent to my institution and examined the 27th of January 1854, in the presence of her physician and of her mother. I was desirous of ascertaining whether there was any particular sensibility in the spine, or whether there existed any deformity in the vertebral column; but I found it impossible to examine the spine, as she was unable to keep upright, when the stays were taken off, and she was very soon seized with a fit. Great mirthfulness often preceded the fits, which had lately been very frequent. She complained of giddiness, heaviness, and fulness of the head; the face was of a greenish-yellow color, very dark circles round the eyes, a slight sardonic smile on the face; the appetite was good, the bowels regular; catamenia scanty, little action of the skin, the forearms, hands, legs and feet cold; the skin of the whole body almost insensible to the prick of a needle; to such an extent was this the case, *that for the amusement of her younger sisters, she would take needle and thread, and stitch away upon the skin of her arm or leg with the most perfect sang froid.* The epigastrium was the seat of almost constant pain and tenderness, and the abdomen would often suddenly swell to a most uncomfortable size.

No beneficial effects having resulted from a lengthened therapeutic treatment, Dr. Dudgeon, whose patient she was, placed her under my care. During the first week of the treatment, she had a fit more or less violent of from ten to twenty-five minutes

* In the treatment of ladies, besides the medical man, only female gymnasts are employed.

every day in my operating room; in the second week she had but two fits, and in the third a slight one at home: in the following three weeks there was no fit, and no bad symptoms appeared even during the catamenia. The 16th of March, about six weeks after the beginning of the treatment, this young lady left town in perfect health, and became so much stronger, that she was enabled to dispense with stays, the absence of which however it is impossible to detect, and for the abolition of which injurious article of dress, the lady has become a zealous advocate. She had no fits till some weeks afterwards, when the catamenia *suddenly* ceased, without any known cause, but since this time, notwithstanding all the excitement incidental to her position in life, she enjoyed the best health during the past season.*

The following three prescriptions of movements were used, and with the exception of sponging with cold water, in the morning, no medicinal or hygienic agent was employed, as Dr. Dudgeon wished to give a fair trial to the medico-gymnastic treatment.

The Swedes use symbols, the Germans abbreviations, in their prescriptions, but as both are unintelligible to the uninitiated, I prefer using the names of positions and movements *in extenso*, as I have no wish that the prescriptions should not be understood.

30th January, 1854.

FIRST PRESCRIPTION.

1. Half lying, double hand-rotation (passive).
2. Half lying, double hand-flexion (P.R.) and extension (G.R.)
3. Half lying, double foot-rotation (passive).
4. Half lying, double foot-extension (G.R.) and flexion (G.R.)
5. Half lying, double forearm-extension (G.R.) and flexion (G.R.).
6. Half lying, alternate stride- (or hip-) rotation (passive).

* Since this was written, she has had twice, while the catamenia appeared, a slight fit, but without any consequent prostration of strength, and although this case is not a perfect model of a cure, it will serve as an instance of the utility of medical gymnastics rationally applied in similar nervous derangements.

7. Wing-, high stride sitting, trunk-twisting (G.R.) and (P.R.).
8. Half lying, double leg-flexion (P.R.) and extension (G.R.).
9. Rack-, half lying, arm-extension (G.R.) and flexion (P.R.).
10. Half lying, leg-abduction or separation (G.R.) and adduction or bringing together (P.R.)
11. Half lying, double arm-fulling and stroking.
12. Half lying, loin-lift-stroking.

All the movements of the first prescription were made with the exception of No. 7, in a half lying position, because the patient was weak, and consequently a support was necessary. I acted principally on the limbs, to draw off the superabundance of nervous fluid from the brain, and to increase the capillary circulation in the forearms, hands, legs and feet, which were constantly cold; therefore most of the movements were directed to the extremities. The *passive* movements on the hands and feet, although momentarily retarding the circulation, increase it in their secondary action, as well as the temperature of these parts. The *half-active* movements, by the more copious afflux of nervous fluid and arterial blood, accelerate directly the capillary circulation in the parts most remote from the internal organs, and more blood being necessary in the extremities, its quantity in the central organs is diminished. By the attention directed in these half active movements to the limbs, and by the efforts of executing them, more nervous fluid is brought to the surface, and thus the temperature of these remote parts is raised. The *twisting movement* (No. 7) acted on the obliqui abdominales and abdominal organs very powerfully, and contributed to the improvement of the abdominal circulation; the *leg-separation* was used to throw the blood into the muscles of the thighs, and to produce a more copious menstruation.

The following engravings and descriptions of the single movements will show the reader clearly how they were done, and if he takes the trouble of executing them, as the operating gymnast, or the patient, he will feel the sensations and effects produced by the various movements, allowing an interval of from two to five minutes between them.

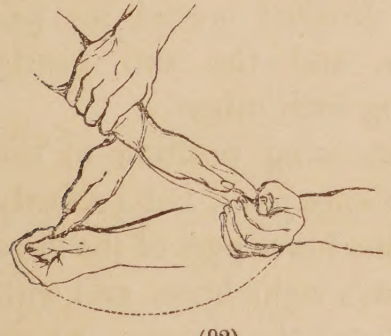
1. *Half lying, passive hand-rotation* (fig. 91).

(91)

The patient is in *half lying* position; two gymnasts stand one on each side, and make simultaneously the rotation, or a kind of circular movement of the hands in the wrist joints while the patient is passive. The engraving represents the perfectly passive left forearm of the patient, which is fixed above the wrist by the right hand of the gymnast, who stands to the left of the patient, and with his left hand takes hold of the patient's passive left hand, in order to make with it the circular movement, indicated by the dotted circle: he makes ten or twelve circles in the direction from right to left, and after an interval of a few seconds to half a minute, the same number of circular movements in the opposite direction; and this operation with the necessary intervals is repeated once or twice more, so that the whole number of rotations amounts to 36 or 48. These *hand-rotations* generally precede and follow the *hand-flexion and extension.*

2. *Half lying, double hand-flexion* (P.R) *and extension* (G.R.) (fig. 92).

The patient and two gymnasts are in the same commencing position as in the previous movement, with this difference, that the hand and fingers of the patient are perfectly stretched, and the gymnasts bend them, or vice versa. The engraving shows two positions of the patient's left hand; in the upper the hand and fingers are stretched, and form a *straight* line with the forearm; the left hand of the gymnast takes firm hold of the fingers, and tries, whilst bending the hand at the wrist joint, to pull it also slightly, so that there is during the whole flexion, in which the patient resists, a *pulling* of the hand combined with the flexion.



(92)

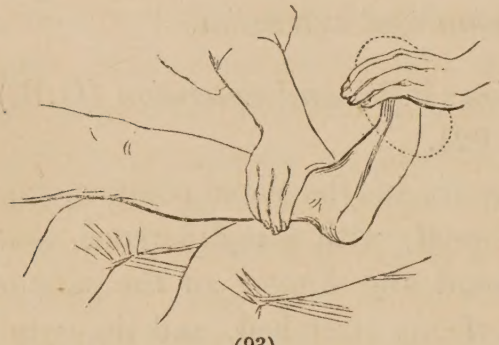
The hand bent at the wrist joint (the lower position in the engraving) is the final position. After an interval of a few

seconds, during which the hands of the gymnast as well as that of the patient, remain in the final position, this becomes the commencing position of the movement *hand extension* (G.R.), in which the patient stretches the hands, while the gymnast resists. During both the flexion and extension, the gymnast fixes firmly with his right hand the patient's forearm. The hand flexion (P.R.), and extension (G.R.), are done alternately, with an interval of a few seconds, four to six times.

The word "*double*" before the name of the movement, indicates that the movement is done simultaneously on both hands by two gymnasts; but should the patient be very weak, or unable to act with both hands at the same time, the movement is done alternately on each hand.

3. *Half lying, double foot-rotation* (passive) (fig. 93).

The patient is in *half lying position,* his legs in stride position, instead of resting with their whole length on the couch (as in fig. 71), are supported from the knee downwards on the knees of two gymnasts, who sit obliquely outwards before the patient: the one on the left of the patient with his right side, the other on the right of the patient with his left directed toward the patient, and the two nearly facing each other.



(93)

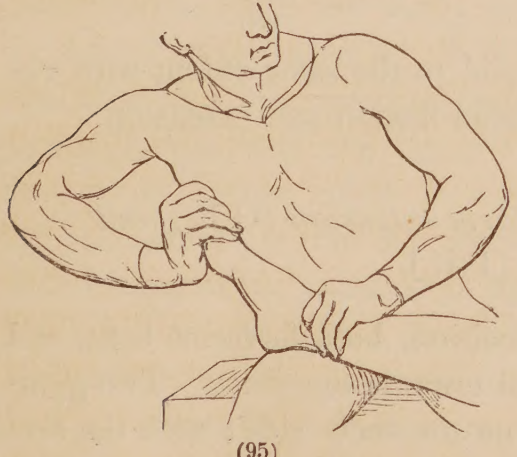
The engraving illustrates the commencing position of the patient's left leg, stretched only at the knee joint, but perfectly passive at the ancle joint, resting with the lower part of the knee joint on the upper part of the gymnast's right knee, and with the lower part of the calf on the left knee of the gymnast, whose knees are placed apart at a convenient distance, depending upon the length of the patient's leg. The gymnast fixes the leg by grasping it near the ancle joint, so as to allow a free rotatory movement in the foot joint, analogous to the rotation of the hand, and which he executes with his left hand placed on the joint of the foot. The rotations of the foot are rather elliptic

than circular. It is understood that the gymnast engaged in the execution of the movements on the right foot, makes use of his hands in a reversed manner. With regard to the execution of the foot rotation and the number of rotatory movements, I refer to the description of the *hand rotation.**

4. *Half lying, double-foot-extension* (P.R.) *and flexion* (G.R.) (fig. 94 and 95).

(94)

The patient and gymnast are placed as in the preceding movement, as far as regards the legs and knees. The diagram shows the commencing positions of *the foot-extension* (G.R.) and the patient's right foot resting on the knees of the gymnast, who sits on the right; the foot of the patient is bent at the foot joint, and his toes stretched; the left hand of the gymnast fixes the foot above the ancle by a firm grasp, his right arm is bent at the elbow joint, while his right hand grasps the toes and presses firmly on the joint of the toes and the upper part of the sole; the upper part of the gymnast's body is obliquely bent to the left, in order to resist not only by the power of the arm but also by the weight of the body during the action of the extensors of the patient's foot; during the extension of the foot, the position of the arms and hands of the gymnast with respect to his own body should not change, to which end he gradually bends in the lowest part of the spine

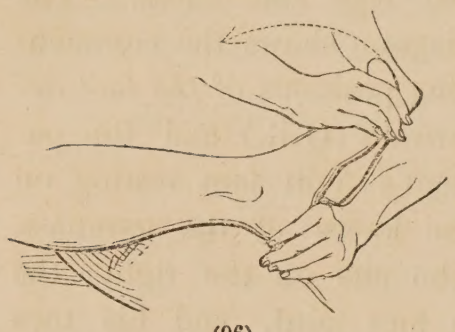


(95)

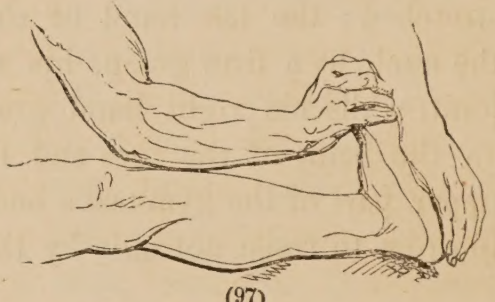
* Whole-length engravings of the patient's and gymnast's positions in half lying foot-rotation, in foot-extension (G.R.) and in foot-flexion (G.R), are published page 178, 179, 180, of my book, "The Prevention and Cure of many Chronic Diseases by Movements."

till he assumes the position shown by the diagram (fig. 95). Remaining with his body thus bent to the right, he changes the position of his arms, and places the hand by which he had fixed the leg near the ancle joint on the anterior and upper surface of the foot and toes, (as in the commencing position of the next movement (fig. 96), which represents the hands of the gymnast placed on the left foot of the patient,) and with the hand which had grasped the toes, he takes hold of the heel in order to resist the flexion of the patient's foot, in which he is again assisted by the weight of the body.

Fig. 96 illustrates the commencing position of *foot-flexion* (G.R.) The left foot of the patient is stretched at the ancle joint, the right hand of the gymnast, who sits to the left, is placed on the upper and anterior part of the foot and toes, while his left hand takes hold of the patient's heel; the gymnast resists till he comes into the final position represented in the diagram (fig. 97), where the patient's foot is seen at its greatest flexion. The *foot-extension* (G.R.) and *flexion* (G. R.) are done alternately, preceded and followed by the *foot-rotation*, in the same manner, and to the same extent with regard to their repetition, as the hand-flexion and extension.



(96)



(97)

5. *Half-lying, double forearm-extension* (G.R.) *and flexion* (P.R.).

The patient is in half lying position, both forearms bent, and with the stretched hands directed towards the chest. Two gymnasts stand near the patient, one on each side; with the arm next to the patient, they take hold of his upper arm, which they fix, while they grasp with the hands of the other arm the forearms above the wrist joint, and resist the patient extending

the forearms. The commencing position is similar to the engraving (fig. 6) with this difference, that the gymnast's left hand must be placed on the outside of the patient's forearm; then follows the *forearm-flexion* (G.R.), which is described as *active-passive forearm flexion* (see figs. 5 and 6). The flexion and extension are done alternately three to four times.

6. *Half lying, passive alternate stride (or hip) rotation.*

The patient is in half lying position: a gymnast standing sideways takes hold, while one leg is bent in the knee and placed with the foot on the floor, of the other perfectly passive leg, which he bends in the knee and hip joints, and moves it so that the knee describes a circle. The engraving (fig. 98) represents the passive left leg of the patient bent at the knee joint, the right hand of the gymnast who stands at the left, making the rotatory movement of the hip-joint, while his left hand is supporting and carrying the foot by a grasp at and round the heel. The dotted circle is that which the knee describes, and which by degrees is made to sweep a larger and larger circle.

(98)

After the rotation of one hip joint, which comprises thirty to forty circular movements, done with the necessary intervals, partly to the right and partly to the left, the same operation is performed on the other leg. It is desirable that a second gymnast, standing in a bent position before the patient, should fix the patient's hips, and the leg which is on the floor; the first he does by his hands, while he fixes with both his knees and legs the patient's knee and leg placed between them as seen in the dotted lines of the gymnast in fig. 116, with this difference, that the gymnast places his hands on the patient's hips, while the arms of the patient are passive, instead of being in wing-position, as shewn in that diagram.

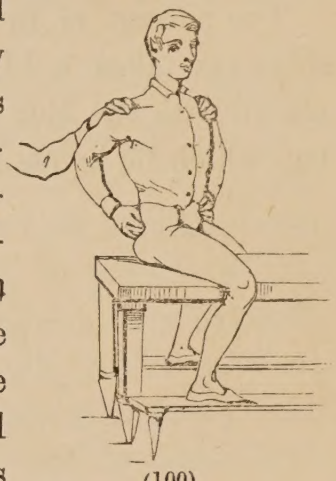
7. *Wing-high-stride sitting, trunk-twisting* (G.R.) and (P.R.).

The patient with the hands on the hips (*wing*) is sitting with

the feet apart (*stride*) on a *high* operating chair provided with two narrow boards on each side, on which the feet rest, and are prevented from slipping by a half circular strap fixed on the boards. In this position the patient twists his body first to one side, while the gymnast resists by placing his hands on the patient's shoulders, so that while he pushes against the shoulder which is moving backwards, he always pulls slightly with his other hand the shoulder which is moving forwards.

(99)

The engravings 99 and 100 show more distinctly how the movement is done. The first represents the patient in *wing-high-stride-sitting position*, with the upper part of the body twisted to the left; the right hand of the gymnast, who is supposed to stand behind him, is



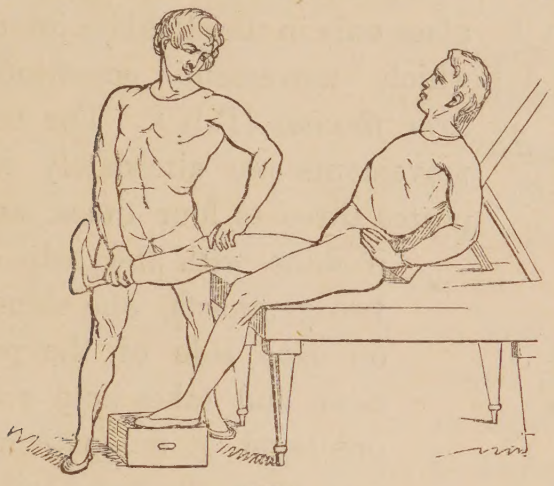
(100)

placed on the upper and posterior part of the patient's right shoulder, against which it pushes, while the left hand of the gymnast is placed on the upper and anterior part of the patient's left shoulder, which it pulls or rather holds back, when the patient twists from the left to the right. In fig. 100 the right shoulder, which was previously directed forwards, is now directed backwards, because the body is twisted to the right. The *twisting* is done three times alternately to the right and left while the gymnast resists, and as often by the gymnast while the patient resists. The resistance either on the part of the gymnast or the patient, must in no case be too strong, but always in proportion to the strength of the patient, whom I advise to breathe deep after each half-active movement, that he may not be fatigued.

8. *Half-lying, leg-flexion* (P.R.) *and extension* (G.R.).

The patient in half lying position rests on the couch, only to the knees. While his legs are stretched, two gymnasts stand

in walk position, one on each side of the patient's legs protruding beyond the couch, and fix the lower part of the thighs above the knee-joint by the hand nearest to the patient, while they bend his knees, with the other hands grasping the patient's legs above the foot-joint, which they press gradually down while the patient resists: the gymnasts are consequently stooping when the final position of *leg-flexion* (P.R.) is attained, they then resist without any change of their hands while the patient again stretches his legs, and thus the *leg-extension* (G.R.) is executed. The engraving (fig. 101) illustrates the commencing position of *right leg-flexion* (P. R.), and fig. 102 the final position, which is also the commencing position of *right leg-extension* (G.R.) while fig. 101 is its final position. The movements are done alternately three times.



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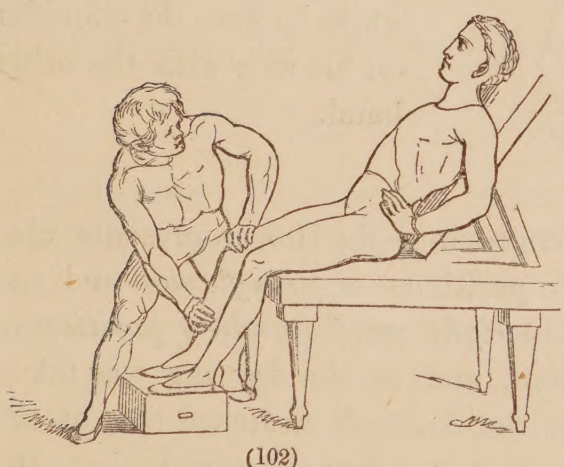
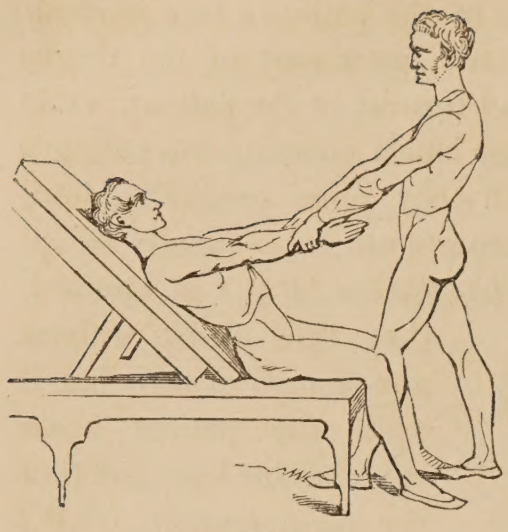


(102)

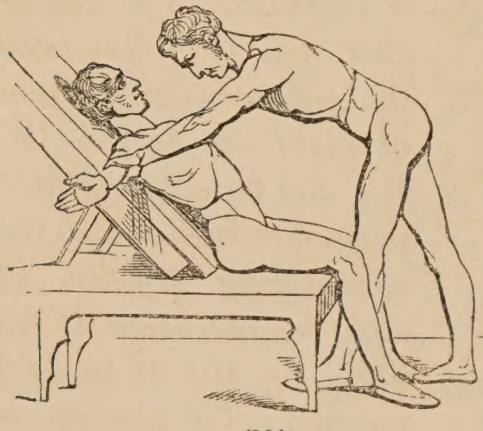
9. *Rack-half-lying, arm-extension* (G.R.) *and flexion* (P.R.).

The commencing position of the patient with his arms stretched forwards (rack) as clearly shown in the engraving fig. 103. The gymnast standing in walk position, (in order to be more firm), takes hold of the patient's stretched arms near the hand joints, and resists while the patient moves the stretched arms in a horizontal line backwards, and in the shoulder joints only till the position of fig. 104 is attained



(103)

where the gymnast, whose feet must not move, is seen very much bent forwards. From this position the gymnast pulls the stretched arms of the patient, who resists again into the first position, the bending taking place only in the shoulder joints, which movement constitutes *arm flexion* (P.R.). The two movements are alternately repeated three to four times, and if done with the help of two gymnasts, one stands on each side of the patient, and takes hold with one hand of the patient's arm near the hand joint, while he fixes the shoulder on his side with the other hand.



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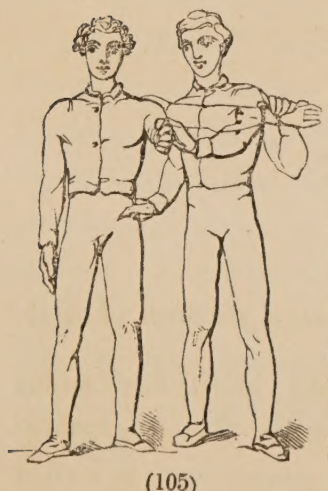


(105)

The engraving, fig 105, represents also the two positions of *arm-flexion* and *extension* in *right walk-standing position* of the patient, and as the drawing was taken in front, the forward stretched arm of the patient is seen fore-shortened, but the two positions of the gymnast's left arm in the two actions are distinctly seen, while his right hand fixes the patient's hip. Two gymnasts are wanted in the standing position, in which the movement is considerably more difficult for the patient than in the sitting position.

10. *Half-lying, double leg-separation or abduction* (G.R.) *and adduction or bringing together* (P.R.).

The patient is in half lying position, his stretched legs touching each other in their whole length, while the knees and toes are turned outwards, and are kept by a gymnast, who stands before him in walk position, as shown in fig. 86. The patient separates the stretched legs while the gymnast resists, as far outwards and horizontally as possible, in which positions, after a few seconds employed in breathing, the opposite movement *leg-adduction* (P.R.) is done by the gymnast, while the patient resists. The two movements are done alternately three or four times. The patient may have the arms in *wing position.* When two gymnasts execute the movement, as the patient gains strength, one stands on each side, takes hold of one leg with one hand at the foot joint, and assists with the other placed above the knee-joint to stretch the leg of the patient, who during the movement is frequently disposed to relax the knee. The abduction and adduction alternately done are also called division, and executed three or four times.

11. *Half-lying, fulling of the arms.*

This passive movement is done by two gymnasts standing one on each side of the patient, and is performed simultaneously on the patient perfectly passive, arms hanging down at the side, the patient being in half lying position. The gymnasts place the palms of both hands on the opposite sides of the arm, which they slightly press, as seen in fig. 106, representing the right arm of the patient; he then slides one hand forwards, and the other backwards, and so on as seen in fig. 107, representing the patient's left arm. The dotted lines indicate

(106)

(107)

the to and fro direction, as the hands progress slowly from the upper part of the arms to the hands and fingers, which are thus put into a quick vibration, if the patient's arms are perfectly passive. The number of to and fro movements varies from 20 to 30, from the upper arms to the fingers. The fulling is repeated three or four times, so that the gymnast moves his hands in the course described from 60 to 80 or 90 to 120 times. This movement is generally finished with a *longitudinal stroking* from the shoulder to the hand, for which purpose the gymnast takes hold with both hands, his fingers being stretched at the highest parts of the patient's arm, and while pressing gently makes a stroking movement similar to mesmeric passes, but differing from them, inasmuch as the slightly pressing hand is in contact with the arm. The *arm-stroking* is done three or four times, and it each time begins at the highest point of the arm.

NOTE—*Stroking* is the moving of a gymnast's hand or hands near to or in contact with the surface of different parts of the patient, so that larger or smaller surfaces are fanned by the hand of the gymnast, or are in mediate or immediate contact with it, according as the parts are or are not covered with clothing. The first kind of stroking is called *near-stroking ;* the second, *contact-stroking :* of the latter there are two kinds, the *slighter* and the *stronger,* according to the degree of pressure made during the movement.

12. *Half-lying, loin-lift-stroking.*

The patient is in half lying position with the feet placed apart on the floor. The gymnast standing before him in a walk position, places the hands in such a manner that they touch each other with the tips of the fingers, or cover each other in the region of the loins of the patient. The gymnast then lifts the middle part of the trunk a little upwards, so that the pit of the stomach projects, the shoulder blades and the posterior surface of the thighs with the seat still remaining on the chair. As soon as the patient is a little raised, the gymnast pulls him still more forwards, while his arms are placed round the body of

the patient; he then brings his hands in front by a stroking movement till his wrists almost touch each other on the anterior side of the patient's abdomen, on which the patient falls softly back and down on the chair. Such stroking is done five or six times, and after a little pause is sometimes repeated. In the present case the patient's abdomen was so tender, that the hands were brought down sideways to the thighs.

The movements were well borne by the patient, with the exception of the *half-lying leg-abduction* (G.R.) and *adduction* (P.R.), which produced such a disagreeable and uncomfortable sensation, that I substituted for it the movement

Trunk lying, pelvis-rotation,

which is a passive movement analogous to the above described rotations, and which is done while the patient is in *trunk-lying position* (fig. 64, representing the patient and one gymnast fixing the body); a second gymnast takes hold of the patient's stretched legs, puts the pelvis and legs into a circular motion describing a cone, the point of which is at the lowest part of the spine, while the basis is formed by the patient's feet. After eight to ten rotations or rollings to the right, the same number is done to the left, and the whole operation repeated after a short interval. This last movement was done principally to accelerate the abdominal circulation, and to increase the menstrual secretion, on which I could not act by the prescribed *half active leg-division,* in consequence of the uncomfortable feeling which it produced.

The movements of the first prescription were continued to the 19th of February, amounting to fourteen times only, the patient having been absent from the institution for three days, in consequence of some slight indisposition. The improvement attained in this short period induced me to change the prescription to another, which contained the following movements.

19th Feb. 1854. SECOND PRESCRIPTION.

1. Half lying, longitudinal arm-and-leg-down-stroking.
2. Rectangular high-standing, foot-flexion (G.R) and extension (P.R.).

3. Lean,-stride-standing,-double forearm-flexion, and extension (P.R.) and (G.R.).
4. High-stride-wing-sitting, trunk-twisting (G.R.) and (P.R.).
5. Wing-arch-(supported) squat-standing, leg extension (G.R.) and flexion (P.R.).
6. Stretch-grasp-inclined-reclined-squat-lean-standing, knee-down-pressure (P.R. and knee-raising (G.R.)
7. Wing-stride-toe-curtsey standing, knee-extension (G.R.) and flexion (P.R.).
8. Yard-ledge-standing, trunk-twisting (G.R.) and (P.R.).
9. Half-lying, double-leg-separation (P.R.) and (G.R.)
10. Wing-stride-toe-standing,-trunk-twisting (G.R.)
11. Half-lying,-loin lift-stroking.

This prescription contains several movements in standing position, which the patient was now capable of, in consequence of increased strength.

1. *Half-lying, longitudinal-arm and leg-down-stroking.*

The arm-stroking was done as described after the arm fulling, about eight or twelve times, and as often on the legs. The gymnast standing before the patient, places the hands on the hips, and makes the stroking movement on both legs simultaneously, by moving the hands which are in contact with the patient, down the thighs, the bent knees, legs, and feet.

2. *High rectangular standing, foot-flexion* (G.R.) and (P.R.).

The patient stands on a chair, or some elevated level place, in front of a vertical plank from 12 to 15 inches wide, his feet at a right angle with each other, and the heels a few inches apart. The heel of the foot which performs the movement is about two inches within the edge of the chair, so that the foot projects and is then free to move. The patient bends his arms at the elbow, and fixes himself by grasping the plank on each side with one hand at the height of his elbow. The gymnast standing at the side of the patient, fixes with the hand which is nearest the patient, the heel, and resists with the other hand

placed on the upper part of the foot and toes, while the patient bends the foot upwards. This is *foot-flexion* (G.R.), and when the foot is bent to the utmost, the gymnast after a pause of a few seconds without changing the position of his hands, presses down, that is extends the foot, while the patient resists, and this is *foot-extension* (P.R.). When the foot is to be bent by the gymnast from the last position (extension), then he must place his hand *under* the foot and toes, and pull these parts up while the patient resists: this is *foot-flexion* (P.R.) From this position, without any change, the *foot-extension* (G.R.) is made by the patient stretching the foot while the gymnast resists: these four different foot movements may be executed also in the following way:

1. Foot-flexion (P.R.)
2. Foot-flexion (G.R.)
3. Foot-extension (P.R.)
4. Foot-extension (G.R.)

In this case the gymnast must change his operating hand after each movement, which is repeated at least three times, so that the number of actions in these movements amounts at least to twelve to each foot. Both the flexors and extensors of the foot are acted upon in a high degree in this position, in which a great part of the muscles of the trunk and of the other leg are brought into activity, in order to keep up the position during the movement.

3. *Lean-stride-standing, double forearm-flexion and extension.* (P.R.) and (G.R.)

The patient is in stride-standing position, and leans with the back against a vertical plank or post, 12 or 15 inches wide. Two gymnasts in walk position stand one on each side of the patient, and take hold of his forearms which are bent forwards, while the upper arms in yard-position are fixed. The gymnast on the right fixes the patient's right upper arm with his left hand, while the gymnast on the left fixes the patient's left upper arm with his right hand; while they both resist or pull with the other hands, grasping the patient's forearm. Having given the details of the *forearm-flexion* (P.R.) and *forearm-flexion* (G.R.), with the illustration belonging to them, I will only mention, that in the *forearm-extension* (P.R.), the gymnast pulls the patient's forearm from the bent position, till it is

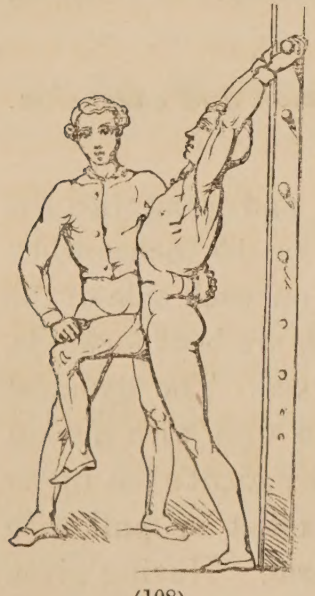
stretched, and in the same horizontal line as the upper arm, while the patient resists. The *forearm-extension* (G.R.) is also in the same direction done by the patient, while the gymnast resists. The four different movements are done twice or thrice each ; and with regard to the order in which they follow each other, I refer to the preceding movement.

4, *High-stride-wing-sitting, trunk-twisting* (G.R.) and (P.R.). This movement is described in the first prescription.

5. *Wing-arch-squat-standing, leg-extension* (G.R.) *and leg-flexion* (P.R.)

The patient is standing with the hands on the hips (*wing*) and the chest well vaulted (*arch*), with his knee bent, (see the position of the left leg, fig 30) ; but instead of keeping it freely up, the thigh is supported by a horizontal padded bar, while a gymnast standing behind the patient fixes him by holding the hips. The operating gymnast stands on the other side of the bar, and executes the movement exactly as described in the first prescription, with-this difference, that the *leg-extension* (G.R,) precedes the *leg-flexion* (P.R.)*

6. *Stretch-grasp-inclined reclined-squat-lean-standing, knee-down pressure* (P.R.) *and knee-raising* (G.R.). figs. 108, 109.



(108)

The patient stands in inclined - reclined position : his arms are extended upward, and the hands grasp a high peg protruding on each side of the vertical plank, against which one leg presses (leans) with the heel, while the other leg is in squat position. Two gymnasts standing one on each side of the patient, place each one

(109)

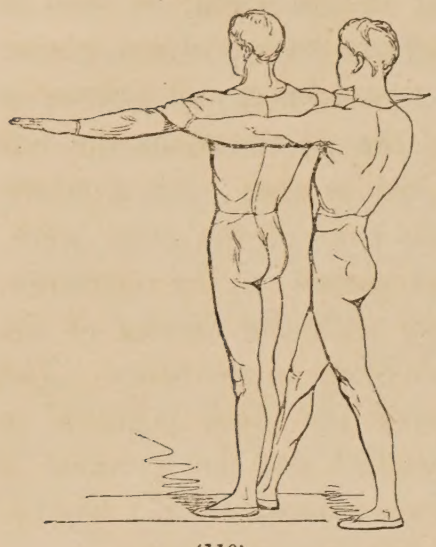
* At page 181 of my book, the *Cure of Diseases by Movements*, is a larger engraving of this position of the patient and operating gymnast in this movement.

hand on the sides of the lowest part of the patient's spine (the loins) and pull the body so forwards that the stomach is the most protruding part. The gymnast on the right, as seen in the engraving (fig. 108), standing in right-walk position, places his right hand on the patient's right raised knee, and presses it down while the patient resists. Of the gymnast on the left only the right hand on the patient's loin is seen: this gymnast places his left hand covering the right hand of the other gymnast also on the patient's knee, and assists in the operation, which is done three times alternately with the raising of the knee (G.R.) on one leg, and then as often on the other. The other engraving (fig. 109), illustrates the final position in which the leg of the patient is stretched and the gymnast is bent, and from which attitude the *knee-raising* (G.R.) begins, which is done by the patient while the gymnast resists.

7. *Wing-stride-curtsey-toe-standing, knee-extension* (G.R.) *and flexion* (P.R.).

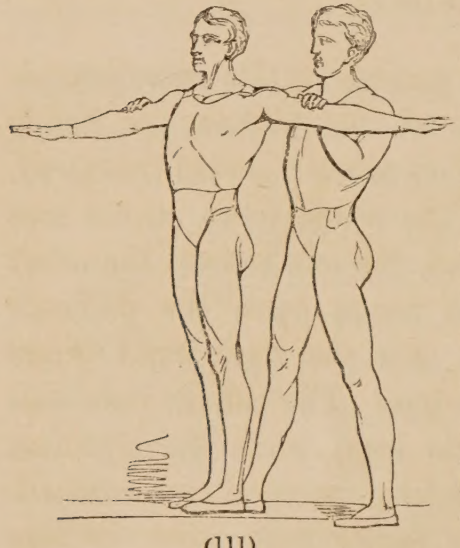
The commencing position of the patient in this movement is indicated by the dotted lines of fig. 50, which show the hands on the hips (*wing*), the knees bent very much outward (*curtsey*), the feet placed apart (*stride*), and the whole body on the toes (*toe-standing*). Two gymnasts stand, the one before, the other behind the patient, and place their hands upon the patient's hands on the hips, in such a way that the right hand of one gymnast covers the left of his colleague. The patient then still on his toes, gradually stretches his legs, while the gymnast resists till the wing-stride-toe-standing position is attained. The gymnasts afterwards press, or rather pull down the hips to make the patient's legs bend, although he resists, and this is called *wing-stride,-toe-standing, knee-flexion* (P.R.).

8. *Yard-ledge-standing, trunk-twisting* (G.R.) and (P.R).
(Figs 110 and 111.)



(110)

The diagrams represent the twisting of the standing patient, whose arms are stretched out (*yard*), while the feet placed two or three inches apart, are prevented from slipping by two small ledges at the edge of a fixed board, sufficiently wide to receive the two feet of the patient and a third one of a gymnast placed partly between the two former. The gymnast standing behind the patient in *walk-position*, places the anterior part of one foot between those of the patient, and thus presses them slightly against both ledges: he takes hold of the patient's upper arm by a grasp near the elbow joints, and pushes with one hand against one arm, while with the other he slightly pulls the other arm of the patient, who during the movement holds his arms perfectly horizontal in the height of the shoulders, and so inflexible at the shoulders that as the arm moves the trunk moves. The twisting is done as described in the first prescription, but differs in this, that here the legs also participate in the twist movement, and only the feet remain perfectly still. Fig 110 illustrates the commencing position, and fig 111 the final position of *yard-standing, trunk-twisting to the right* (G.R.).



(111)

9. *Half lying, double-leg-separation* (G.R.) and (P.R.)

The commencing position of the first movement, viz. with the resistance of the gymnast, is illustrated by fig. 86. The

leg-separation (P.R.) is done while the legs of the patient who is in *half-lying position*, are placed near each other. Two gymnasts, one on each side of the patient, stand near the legs in *crooked-walk position;* with one hand they grasp the leg above the foot-joint and pull it towards themselves, thus separating the legs while the patient resists; the other hands of the gymnasts are placed above the knees to assist them in remaining stretched.

Leg-separation (P.R.) acts very strongly on the abductors of the legs, and thus differs entirely from the first part of the movement in which the abductors are brought into activity; the two movements are done one after the other, and the adduction of the legs which precedes each action, is done actively, that is merely by the patient.

10. *Wing-stride toe-standing, trunk-twisting* (G.R.)

This is a twisting of the body, alternately on both sides, with resistance of the gymnast on the shoulders of the patient, whose hands are on the hips, and the feet apart on the toes. The movement is done three times on each side.

11. *Half lying, loin-lift-stroking* is mentioned in the first prescription.

The movements of the second prescription were done till the 6th of March, but only ten times, as a violent cold prevented the patient's attendance at the Institution for several days, but notwithstanding this the improvement continued at increased speed.

6th March, 1854. THIRD PRESCRIPTION.

1. Half-lying, longitudinal arm-, leg-, and loin-lift-stroking.
2. Half-stretch, reclined-, walk-standing-, upper- and fore-arm-flexion (G.R.)
3. Stride-toe-standing, arm-extension out and up (G.R.)
4. Half-stretch, high-stride-sitting, trunk-twisting (G.R.) and (P.R.).
5. Toe-opposite-fall-standing, posture and raising (P.R.).
6. Rack-, crooked-, thigh-opposite close-standing, trunk-raising (G.R.) and bending (P.R.).

7. Stretch-grasp-inclined-reclined-squat-lean-standing, knee-down-pressure (P.R.) and raising (G.R.).
8. Wing-, jump-, half-lying, leg-extension (G.R.).
9. Wing-, long-stride-, fall-sitting, trunk-twisting (G.R.) and (P.R.).
10. Stride-standing, head-raising (G.R.) and flexion (P.R.).
11. Half-stretch-, hip-lean-, walk-standing, trunk-sideways-flexion (G.R.) and raising (P.R.).
12. Opposite-, inclined-reclined-standing, transversal-loin-stroking.

1. *Half lying, longitudinal arm-leg and loin-stroking* was mentioned partly at the end of the first and partly at the beginning of the second prescription.

2. *Half-stretch-, reclined-, walk-standing, upper and forearm flexion* (G.R.) (fig. 112).

(112)

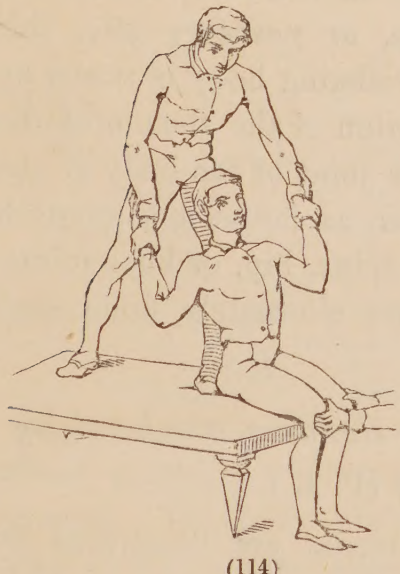
The patient stands with one leg placed forwards (*walk position*), and one arm stretched up (*half-stretch*), while the other is either in *wing* position or passively hanging down; the body is slightly bent backwards (*reclined*). The gymnast standing behind the patient on a slight elevation, takes hold of the stretched arm at the wrist joint, and resists while the patient bends the arm simultaneously at the shoulder and elbow joints till the elbow is brought near the side of the body; the other hand of the assistant fixes the other shoulder of the patient, where there is no movement. The engraving shows the patient's right leg in *walk-*, and the right arm in *stretch*-position. This position may be changed so that the arm of one, and the leg of the opposite side are used in the commencing positions, but in this case the effects differ considerably on the two sides of the body. The dotted arms in the engraving shew one of the intermediate positions of this

movement, which was done three times on one side, and as often with change of the arm and leg on the other side.

The following two engravings show also an *upper- and fore-arm-flexion* (G.R.) done on both arms, while the patient is in *stretch-, fall-, stride-full-sitting* position, as seen in the figure (113), one gymnast standing behind the patient on the chair in *stride-left-twist* position, supports with the external side of his left leg the patient's body, and resists by taking a firm hold of both arms; a second gymnast standing or kneeling in front of the patient, fixes the knees; the patient's hands are stretched and do not grasp the gymnast's arms in order to prevent the action of the flexors of the hand and fingers.

(113)

The second engraving (114) shews one of the intermediate positions; the thorax of the patient appears more protruded, while his arms are bent sideways and downwards. The gymnast is in *crooked* position.



(114)

3. *Stride-toe-standing, arm-extension-out and up* (G.R.)

The patient was placed with the feet apart, on the toes, as the strength now admitted of this attitude.

The patient makes the movements of first bending up the forearm and then stretching it out (*yard*) or up (*stretch*) position, as seen in the stretch-and yard-position (figs. 9 and 40) while a gymnast standing behind takes hold of both forearms near the wrist joints and resists during the movement. The *stretching up* as well as *out* are done each three times.

11. *Half-stretch-high-stride-sitting, trunk-twisting* (G.R.) and (P.R.)

Is done as the movement of the same name in the two first prescriptions, from which it differs in this that the patient has one arm stretched up, while the other is either in *wing* position, or freely hanging down; the gymnast takes hold of the patient's stretched arm, at the wrist joint, and resists the twisting, but at the same time assists by a slight pull upwards the stretching of the arm; the other hand of the gymnast is placed on the shoulder where the arm is not stretched.

5. *Toe-opposite-fall-standing, posture and raising* (P. R.)

The patient leans with the points of both his feet touching each other against a wall, or any vertical surface, his whole body with the arms stretched down near it, is kept stiff by his own muscular force; and when in *fall position* supported by a gymnast standing behind him, who places one or both his hands on the part where the back of the head joins the neck (occiput); the patient remains in this position from some seconds to half a minute, and this is called *holding, or posture;* after this time the patient's perfectly stiff and resisting body is raised by the gymnast, so that with the exception of the flexion of the foot-joints, no movement in any other joint of the body of the patient is visible, who must endeavour, as far as his strength permits, not to bend the body at the spine, hip, or knee joints. *The holding and raising* (P. R.) are alternately done each three times.

6. *Rack-crooked thigh opposite-close-standing, trunk-raising* (G. R.) *and bending* (P. R.)

The positions of these two movements are illustrated by fig. 90.

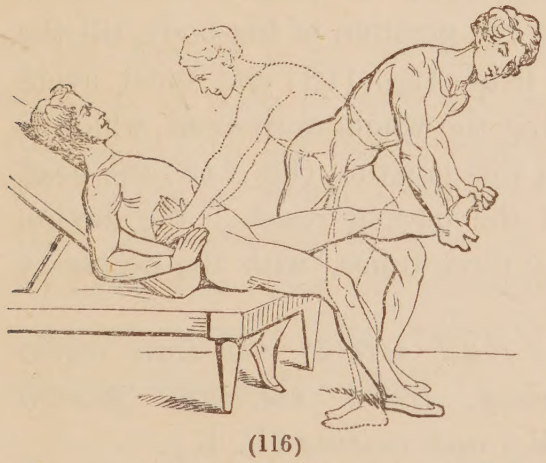
The *trunk raising (G. R.)* and bending *(P. R.)* are done alternately each three times.

7. *Stretch-grasp-inclined-reclined, squat-lean-standing knee-down pressure* (P. R.) *and raising* (G. R.) is described in the second prescription.

8. *Wing-jump-half-lying, leg extension* (G. R.)

The patient with his hands on the hip, is in half-lying position, one of his legs bent on the hip and knee joints similar to the *jump position*, so that the anterior surface of the thigh is directed towards the abdomen; the bent leg is kept at the foot by a gymnast standing at his side, who resists, while the patient stretches his leg. The commencing position, figure 115, shows the gymnast standing at the left of the patient, whose left bent leg he holds at the foot by grasping the heel with his right hand, and the toes with his left; the feet of the gymnasts are placed at right angles to each other, and the left foot (at an interval of at least the double length of his foot) forwards, and parallel to the direction of the left leg, the extension of which he resists. Figure 116 exhibits the final position of the movement, the patient's leg is perfectly stretched, the gymnast's body and left knee bent, while his arms are still as stretched as they were in the beginning; the other leg of the patient and his hips are fixed by a second gymnast, whose position is represented by the dotted line in the engraving. This latter places his hands on the patient's hands, in order to fix his hips, and prevents the patient's leg kept between his knees from moving.*

115.



(116)

* The hands of the assisting gymnast who fixes the patient's hips and one leg are differently drawn in this engraving, which represents the manner in which the hands are applied for making a passive movement, called *abdominal concentric stroking*, in which both hands of the gymnast make simultaneously two concentric circles on the abdomen.

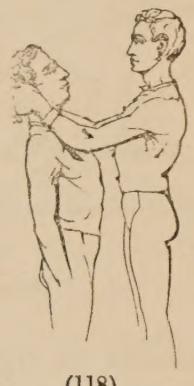
9. *Wing-long-stride fall sitting, trunk twisting* (G. R.) and (P. R.)

The patient with his hands on the hips is in a commencing position, similar to fig. 71 ; the execution of the movement is similar to other trunk twistings.

10. *Stride standing, head raising* (G. R.) *and flexion* (P. R.)

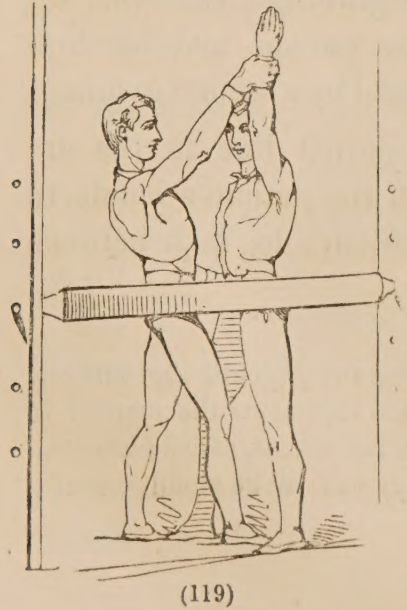
(Figs. 117 and 118.)

(117)



(118)

The feet of the patient are in *stride-*, and the hands either in *wing*-position, or perfectly stretched down as indicated by the dotted lines, and downwards directed forearms in *the position*, (fig. 9,); the head is bent forwards, the gymnast stands a little elevated in front of the patient, on whose knec and occiput he places his hands with the fingers interlaced, while his forearms near the elbows rest on the patient's shoulders as in fig. 117; the patient then raises his head without any change of the position of his body, till the head is somewhat backwards bent, (fig. 118) and must avoid the protruding of his chin during the whole movement, which is resisted by the gymnast; from this position (fig. 118) the head is slowly bent forwards, while the patient resists; the flexion and raising are done alternately three times, with the necessary intervals.



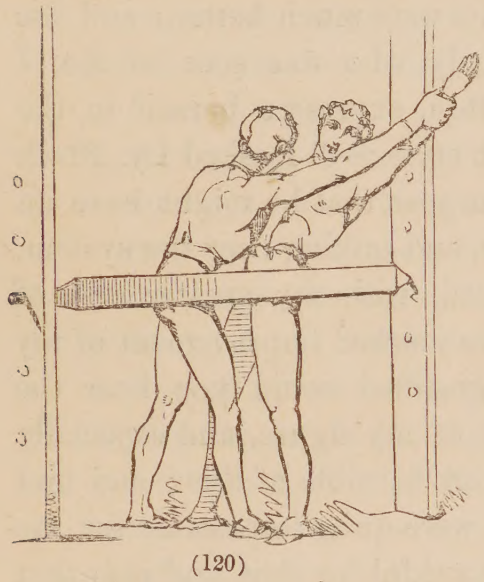
(119)

11. *Half stretch hip lean walk-standing, trunk sideways flexion* (G. R.) *and raising* (P. R.).

(Figs. 119 and 120.)

This is a flexion of the trunk, done sideways by the patient, while the gymnast resists on the stretched arm, which is vertical and inflexible, so that it does not move except simultaneously with the body. Figure 119 shows the patient's left arm stretched, his left hip leaning against a horizontal pad-

ded bar, his right leg in walk position; the gymnast in front of the patient is in right-walk-position, his left hand on the patient's right hip fixes the body, while he takes hold with his right of the patient's stretched arm and resists as long as the patient bends his body to the left; from this position (fig. 120) he raises the patient who resists, again into the commencing position. After a short interval the two movements are alternately repeated three to four times, and as often on the other side. The operator as well as the patient must move only in the spine, while their feet and legs remain immovable.



(120)

12. *Opposite-inclined-reclined-standing, transversal-loin-, stroking.*

The patient is in the position illustrated by fig. 22; the gymnast in walk position stands behind him, and places both his hands with the fingers directed outwards on the loins, and with the palms makes strokings from the spine forwards, at the same time pressing forwards, so that the patient's abdomen is rendered very tense, and protrudes considerably forwards; the stroking is done from twelve to fifteen times, and sometimes repeated after a short interval.

SECOND CASE.—*Double Spinal Curvature.*

Miss ——, twenty-six years old, has been affected with double curvature of the spine for many years, and continual pain in the back. She cannot sit or walk without pain; the head turned to the left, and bent forwards and downwards; the shoulders so much drawn up towards the head that there is scarcely any neck to be seen; impossibility of breathing deep. This lady thought that nothing could be done for her, because she was so far advanced in age, and her complaint of such long standing. She

began the treatment only to please her parents. After three months, although the treatment had been interrupted for ten days on account of a violent cold, her figure had entirely changed. She could sit two hours in church without pain, and walk more than an hour; her spirits were much better; and she felt herself quite different. This lady, who was sent to me, I may observe, by Dr. Black, of Clifton, expresses herself in the following manner upon her present state :—" I asked Dr. Black to spend an evening with us, on purpose that he might have an opportunity of seeing me at leisure, and talking over the system. He seemed very much struck, indeed, with my greater ease of carriage, and look of health, and the marked improvement of my figure. You would, I think, be gratified could you hear the remarks made on the improvement of my figure, and especially on my walking. I feel so much more sensible of this ; and find I am quite able to take walks that were quite impossible for me to think of last year. I am very thankful for this, and also that I never have any pain between my shoulders ; and my general health is better than it has been for years."

This patient, who suffered from general weakness, and was incapable of any exertion, began her treatment the 12th November, 1852, and continued it at the institution to the 16th of February, 1853, during which time she was sixty-eight times under the prescribed gymnastic operations. The great benefit she derived from the movements induced her to re-visit the institution in March, 1854, about twenty times. Since last year she has not been troubled with a cold, though previously she was subject to that complaint; and enjoys such health as has been unknown to her for many years, and I may add, was married last autumn. The majority of the movements of the two first prescriptions were done either in a lying or half-lying position ; the more contracted right shoulder, right hip, and left ankle-joints were acted upon by passive rotations; the cold hands and feet were influenced by movements analogous to those in the previous case. Several active arm and leg movements were used to give more vigour to the limbs while the body in high-stride-sitting position, supported by two assistants, was actively moved forwards, backwards, and sideways.

The 6th January, 1853, began

THE THIRD PRESCRIPTION.

1. Wing half squat lying, alternate leg extension (G.R.)
2. Right yard left stretch right twist stride sitting, right arm extension (G.R.) and flexion (P.R.)
3. Lying, right (stretched) leg-raising (active), and pressing down (G.R.)
4. Stretch lying, right upper and fore arm flexion (G.R.)
5. Wing high stride long sitting, trunk raising (G.R.), and twisting to the right (G.R.)
6. Trunk lying, double leg and chine left-rolling (passive).
7. Right yard left wing curtsey standing, knee-extension (G. R.) with pressure on the right wrist joint.
8. Rack grasp stride standing, head back flexion (G.R.) and forwards flexion (P.R.)
9. Left stretch right wing left hip lean right walk standing, left sideways trunk flexion (G.R.), and raising (P.R. with pressure on the left wrist joint, right hip, the spine, and both knees).
10. Climbing backwards with assistance.
11. Right walk standing, arm extension, out and upwards (G.R.)
12. Right yard left stretch right twist close standing, forwards flexion (active), and back flexion (G.R.)
13. Half-lying, arm fulling.
14. Half-lying, longitudinal back stroking.

3rd February, 1853. FOURTH PRESCRIPTION.

1. Half squat lying, right knee down pressure (G.R.)
2. Lying, left leg raising (G.R.)
3. Left rest right angle crooked thigh opposite standing trunk, raising (G.R.)
4. Right rack left stretch lying, right arm extension (P.R. and G.R., with fulling of the left arm).
5. Right yard left stretch left oblique chine lean stride-standing, trunk right twisting (G.R.)
6. Right yard left stretch right twist right step left toe curtsey standing, knee extension (G.R.)

7. Rest right twist tibia opposite standing, trunk raising (G.R.)
8. Stretch left oblique right walk kneeling, right upper and fore arm flexion (G.R.)
9. Right yard left span stride sitting, trunk left twisting (G. R.), and right twisting (P.R.)
10. Stretch grasp inclined standing, head forwards flexion (active), and back flexion (G.R.)
11. Span forwards lying, trunk raising (active), and trunk down pressure (P.R. with head, and wrist-joint pressure).
12. Wing fall toe opposite standing, trunk raising (P.R.)
13. Half lying, longitudinal back stroking.
14. Half lying, loin lift stroking.

12th February, 1853. FIFTH PRESCRIPTION

contained the majority of the preceding movements, and the following were substituted for those which were left off.

1. Left rest right angle reclined stride standing, trunk forwards-pulling (P.R.) with abdomen, and head pressure.
2. Span stride standing, hip left twisting (G.R..)
3. Forwards leg lying, trunk raising and twisting to the right (active).
4. Left pass standing (left toe), arm-extension in different levels.
5. Left balance standing, arm rotation (active).

The three last active movements, and many others which I thought suitable to preserve the improvement hitherto obtained, were assiduously continued by the lady for a long time at home; and when she returned in March, 1854, the following movements were prescribed :

1. Inclined thigh opposite standing, trunk raising (G.R.)
2. Left yard right stretch chine lean standing, trunk right twisting (G.R.), and trunk left twisting (P.R.) with left arm pressure).
3. Left yard right stretch stride standing, right upper and forearm flexion (G.R.), and extension (P.R.)

4. Wing half lying, leg separation (G.R.)
5. Left yard right stretch inclined high stride standing (on two pegs), trunk raising (G.R.)
6. Hanging, leg-abduction (G.R.), and adduction (P.R.)
7. Right stretch right twist high stride sitting, trunk left flexion (G.R.)
8. Left yard right span grasp close-standing, hip left sideways guiding (G.R.)
9. Stretch grasp right squat standing, right knee down pressure (P.R.)
10. Fore arm support high stride kneeling, alternate back-transversal stroking.
11. Half lying, loin lift stroking.

THIRD CASE.—*Sleeplessness, Low Spirits, cold hands and feet.*

Mr. ———, age forty-two, an artist of eminence, suffered for three months from the above symptoms, and was unable to paint, partly in consequence of the want of sleep, the weakness of his eyes, and inability to hold the brush steady when painting. This inability to work added to his sufferings, which appear to have been at first produced by some mental emotion (grief). Being rather predisposed to hypochondriasis, he had suffered about two years ago from an abdominal complaint. Having tried other medical treatment for several months without any result, he began to attend my institution the 22nd June, 1854, and at the end of the first week, already felt a slight improvement, which continued till his health was perfectly restored. The treatment lasted about six weeks, during which time the following movements were used, in combination with two Russian baths per week. The suitable directions as to regimen were strictly followed by the patient.

22nd June, 1854. FIRST PRESCRIPTION.

1. Half lying, foot rotation (passive), foot flexion, and extension (G.R.)
2. Elbow support half lying, fore arm flexion, and extension (G.R.)

3. Yard high stride sitting, trunk twisting (G.R., P.R.)
4. Half lying, knee extension (G.R.), and flexion (P.R.)
5. Lean rack stride standing, arm extension (G.R.), and flexion (P.R.)
6. Stride curtsey lean standing, leg extension (G.R.)
7. Half lying, arm fulling.
8. Lean grasp half standing, leg forwards guiding (G.R.), and backwards guiding (P.R.)
9. High stride sitting, trunk forwards and backwards swinging (passive).
10. Half lying, longitudinal back stroking.

19th July, 1854. SECOND PRESCRIPTION.

1. High opposite standing, foot flexion (G.R.), and extension (P.R.)
2. Rack right walk standing, arm extension (G.R.), and flexion (P.R.)
3. High stride sitting, trunk sideways flexion (G.R.)
4. Climbing, and deep breathing.
5. Yard high stride inclined sitting, trunk twisting (G.R. and P.R.)
6. Wing thigh supported half standing, knee extension (G.R.) and flexion (P.R.)
7. Yard inclined tibia opposite standing, trunk forwards flexion (active), and raising (G.R.)
8. Lean grasp standing, leg forwards guiding (P.R.), and back guiding (G.R.)
9. Wing thigh opposite crooked standing, trunk raising (G.R.)
10. Opposite inclined reclined standing, loin forwards stroking.

FOURTH CASE.—*Sequelæ of Chronic Rheumatism.*

(The history of this case was written by the patient.)

This case of rheumatism was brought on by sleeping in the bush, standing for hours in cold water, washing sheep, and generally great exposure to cold and wet during six years.

The writer was first attacked in 1845. Symptoms: the knee joints got suddenly inflamed and swollen. The pain and

stiffness increased to such a degree that he was obliged to keep his bed.

The disease then attacked the other joints and the trunk of the body, the jaws also being fixed.

These symptoms were accompanied by high fever, and the writer could not move or breathe without great pain.

Treatment—large doses of calomel, followed by purgatives; leeches were frequently applied to the joints.

When pain had abated, turpentine and hartshorn were also applied. These having failed to remove the pain, mustard and fly-blister were frequently applied to the body and limbs, also croton oil; a state of perspiration being constantly kept up by heaps of blankets and warm drinks.

Diet—chicken broth and gruel.

Sleep was procured by large doses of laudanum. After suffering under the disease for six months, the writer was very much reduced in flesh and strength, but pain being nearly gone, was able to sit up in his room.

He, however, never completely recovered from the effects of the attack, but continued for many months to suffer from pains in the back, chest, and loins; great oppression and difficulty in breathing.

In August, 1846, the writer experienced a second attack, which confined him to bed during September, October, and November of that year. The symptoms were similar to those of the first attack. Treatment—calomel and purgatives, stimulating liniment, and blisters. The diet was light; sleep was with difficulty obtained by means of opiates.

During December, 1846, and January, February, and March, 1847, the writer continued to suffer from chronic rheumatism, till January, 1848, at which time he experienced a third attack, which proved to be more serious than any of the preceding ones. Treatment—calomel and purgatives, Colchicum hydro-iodate of potash, mustard, and turpentine poultices and blisters, and leeches were applied to the knee and toe joints for months together. The joints were then frequently painted with tincture of Iodine, and bandaged, all to no purpose. During this attack the whole system seemed to be affected with the disease.

In consequence of excruciating pain, loss of blood, want of sleep, low diet, and the constant use of opiates for such a length of time, the writer was reduced to a state of extreme debility.

After the fever and pain had abated, hot water and vapour baths were frequently given.

He then began slowly to recover, being able to walk about the house on crutches, after a confinement of five months on this occasion, and suffering under chronic rheumatism, and great debility and depression. In June, 1848, with the advice of his physicians, the writer went to Germany, and took a course of hot mineral baths at Aix la Chapelle, and also at Wiesbaden, without any good effects. He returned to Glasgow in August, 1849 ; and in October of that year, acting on the advice of his physicians, he sailed for Madeira, and during the passage (thirty-one days) was constantly confined to his cabin, suffering from pain in the joints and back, inflammation and swelling of the feet and ankles, being unable to walk, or even to sit, without support. During his residence at Madeira, from November, 1849, till April, 1850, notwithstanding great attention to diet, air exercise, and a course of galvanic treatment, *the chronic effects of the disease still remained.*

In May, 1850, having been nearly six months in Madeira, he returned to Glasgow, in better health, although still suffering from stiffness and general debility ; but he began to get rapidly worse towards the end of October, 1850, when, as a last resource, he went to Rothsay, almost without hope, put himself under Dr. Paterson's care, and was under the water treatment till the end of April.

During these six months no crisis appeared; and he left Rothsay in good health ; and throughout the whole summer, autumn, and part of the winter of 1851, the writer continued the water system at home, taking the pack, cold hip bath, &c., and occasionally a vapour bath, and walking generally from six to eight miles daily. Under this system the chronic symptoms continued gradually to disappear, and he rarely experienced pain or inflammatory action, his strength increased, and he was altogether in a better condition than he ever had been subsequently to the first attack of rheumatism.

In February, 1852, he was again suddenly seized with violent inflammation of the eyes; was obliged to exclude light altogether. Treatment—caustic and fomentations.

This was quickly followed by contraction of the knee joint, great pain and stiffness, which was somewhat abated by hot slops. This was followed by violent inflammation, excruciating pain in the hands and wrists, which continued for several weeks. This pain was somewhat mitigated by *wet stupes* constantly applied.

After several weeks' suffering the pain abated, and settled down in one hand into permanent contraction of the finger-joints. Although the inflammatory symptoms began to abate, the chronic ones continued till July, when the writer was so far recovered as to be able to undertake the journey to Dr. Barter's water establishment at Blarney, County Cork, where he remained ten months, under the following treatment.

For the morning a rubbing sheet; at noon a vapour bath, followed by cold plunge. This was continued every day except Sunday.

The result of this treatment was a gradual disappearance of the inflammatory symptoms; then the chronic symptoms gave way, and a rapid improvement of the whole system followed by increased strength, appetite, &c.

During the last month of his residence at Blarney, the writer had begun to use the wave and perpendicular douche with excellent effect; and left Ireland in the very act of rapidly throwing off all symptoms of rheumatism.

During the past two months he has taken a rubbing sheet in the morning, and four vapour baths per week; and has gained 14 lbs. in weight in ten months.

So far the patient's description of his sufferings. I noted the following in this case:—

1st September, 1853: Mr. F——, about thirty-eight years old, had suffered for the last nine years from rheumatic gout, was sent to me by Dr. M'Leod, of Ben-Rhydding, where he had been considerably relieved from his painful symptoms. Present state: both shoulders considerably raised, the head stiff, impossibility of raising his right arm without assistance further

than into *speak* position, (fig. 14,) the right shoulder more drawn forwards than the left; right hip joint very stiff; both sides of the groins contracted, which gives the appearance of the so-called cock's walk, especially as his spine is almost immoveable, and can scarcely be bent or twisted in any direction; left knee cannot be bent more than 30 to 35 degrees; right ankle joint very stiff; muscles rather rigid, but general strength good. He left for Australia, ten weeks later, in perfect health, having entirely recovered the free use of his limbs. When he began to use his right arm, a sensation of tickling was produced, and consequently a kind of irresistible laughing followed, which I have not yet seen in any other case.

2nd September, 1853. FIRST PRESCRIPTION.

1. Lying, right arm rotation (passive).
2. Half-lying, right hip rotation.
3. Forwards lying, left knee flexion (G.R.)
4. Lying, arm extension (P.R.)
5. High stride sitting, trunk-bending sideways (G.R.)
6. High opposite standing, alternate leg sideways raising (G.R.)
7. Abdomen opposite crooked standing, trunk raising (G.R.) (with pressure on both shoulders).
8. Yard grasp squat standing, alternate knee down pressure (P.R.)
9. Trunk lying, double leg rotation (passive).
10. Stride standing, double knee flexion (active) and extension (G.R.)
11. Half lying, loin left stroking.

5th October, 1853. SECOND PRESCRIPTION.

1. Half lying, right arm rotation (passive).
2. Half lying, right arm extension (P.R. and G.R. obliquely forwards and upwards).
3. Lying, right hip rotation.
4. High opposite grasp half standing, left knee flexion (G.R.)
5. Abdomen opposite standing, trunk twisting (P.R. and G.R.)
6. Thigh opposite standing, trunk forwards flexion (active), and backwards flexion (G.R.)
7. Hip-lean walk standing, trunk sideways flexion (G.R.)

8. Span lying, arm walking.
9. Trunk squat lying, alternate knee down pressure (P.R.)
10. Yard standing, trunk twisting, with assistance on the right arm (P.R. and G.R.)
11. Lying, right arm (obliquely out and up) rotation (passive).
12. Walk and pass positions (active).
13. Opposite inclined reclined standing, chine knocking.
14. Half-lying, transversal loin forwards stroking.

1st November, 1853. THIRD PRESCRIPTION.

1. Right speak standing, right arm in and outwards turning from the shoulder (G.R.)
2. Inclined leg opposite standing, trunk raising (G.R.)
3. Right yard left sideways lying, right arm rotation (active with assistance).
4. Jump trunk lying, alternate knee down pressure (P.R.)
5. Yard trunk lying, leg abduction (G.R.), and adduction (P.R.)
6. Lying, right leg rotation outwards (active).
7. Span lying, posture.
8. Swim hanging, double elbow flexion (active), and arm extension (P.R.)
9. Right heave right pass standing, right arm extension upwards (G.R.)
10. Yard stride curtsey standing, arm movements (active).
11. Yard curtsey standing, trunk fore and back flexion(active).
12. Half lying, transversal back and loin stroking.

I have selected the preceding four cases, with the prescriptions of the movements which effected their cure, partly to show practically the effects of medical gymnastics when scientifically applied, and partly to awaken more interest for this most important branch of medical science, hitherto almost entirely neglected because not sufficiently known. The engravings and minute descriptions of each gymnastic operation in the treatment of the first case will suffice to prove that much more study and skill are required in the practice of this method of cure than is generally supposed.

The prescriptions of the three other cases can be understood

only by those of my colleagues who will take the trouble to study the descriptions of the various movements, which I shall submit to their notice. It is Dr. Neumann's merit to have assiduously collected and published these movements during his mission to Sweden, where he was sent by the Prussian Government to study Ling's medical gymnastics.

FLEXION AND EXTENSION,

Also called bending and stretching, are movements in which two or more parts of the limbs or body approach each other (flexion), or are removed from each other (extension) by a change in the angle formed at the joint by the moved parts. The farther the flexion is carried, the more acute the angle becomes, and thus the bent parts assume a more crooked or angular form; the contrary takes place in the extension. In the limbs there is a bending and a stretching side perfectly defined, which is not the case with the trunk and head. Here each bending forwards, backwards, or sideways, is designated as flexion, and still further specified by the addition of forwards, backwards, sideways, oblique, oblique-backwards, oblique-forwards, right side, left side, right oblique forwards, right oblique backwards, left oblique forwards, and left oblique backwards, to the word "flexion."

Generally, all the movements classed under flexion and extension, are half-active movements; while similar movements, but executed passively, have also different names. In the half-active flexions of the head and trunk, we suppose that the patient makes the movement, and the gymnast resists; but if these movements are done by the gymnast, while the patient resists, they come also under the heads of *pulling*, *pushing*, and *pressure* movements. In these half-active movements of the arms and legs, the movement is generally done by the patient, while the gymnast resists, but as this is not always the case, it is necessary to add in the prescription the letters P. R. or G. R.

Flexion and extension of the arms.

The external side of the arms, when freely hanging down, is the stretching side, and the internal the bending side.

Arm flexion and extension (in the shoulder joints only).

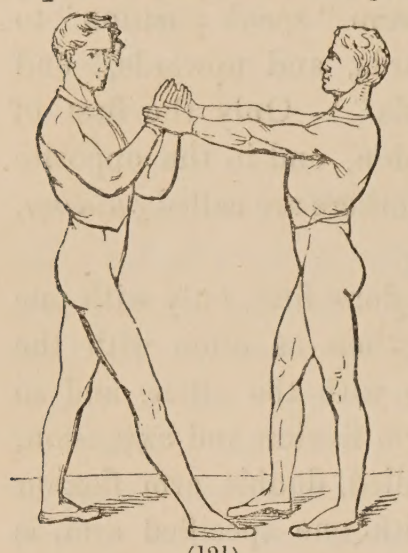
The arms are kept perfectly stiff, and are moved from the "rack" into the "yard position," from "speak position" to "forwards, and upwards," to "outwards, and upwards," and slightly to "backwards, and outwards." Only the first of these movements is a real arm extension, and in the opposite direction, an arm flexion, while all the others are called *guiding*, and are described under that head.

The arm flexion and extension are done first, only with one arm, three times in succession, and then as often with the other, or first with one arm and then with the other, and so alternately, which is called, alternate arm flexion and extension, or with both arms at the same time, called, double arm flexion and extension; the movement done with one specified arm, is denoted by the words "right" or "left," or by the name of the position in which the movement is to be done, for instance: right-rack-standing, arm extension; right-yard or half-yard-standing, right arm flexion. In these instances, the commencing position indicates that the right arm only is moved.

The rack half-lying, double arm extension (G. R.), and the yard half-lying arm flexion (P. R.), with resistance of one gymnast, has been described, page 71; left rack standing arm extension (G. R.), and left yard standing, arm flexion (P. R.) are described, page 72. When two gymnasts resist, they stand behind and sideways of the patient, one places the hand next the patient on his shoulder, and the other on the external side of the wrist. The position of the rest of the body in which the arm flexion and extension may be executed, are the standing, sitting, kneeling, lying, and hanging positions; in the last only with one arm. The trunk and legs may be in fall, inclined, twist, walk, stride, curtsey, squat, kick, and other positions.

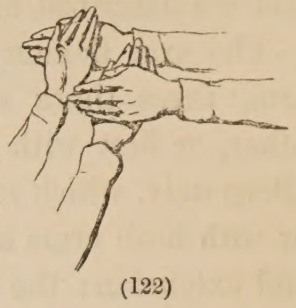
Instances: 1. Yard walk standing, double arm flexion (P.R.) and extension (G. R.). Two gymnasts stand, one on each side of the patient, whose arms are in yard position, and the legs in walk position, and place one of their hands on his hip or on his shoulders, and the other, during the arm extension (G. R.)

or flexion (P. R.), on the outside of the wrist joint. During the arm extension (P. R.) or flexion (G. R.) the second hand is placed inside of this joint.

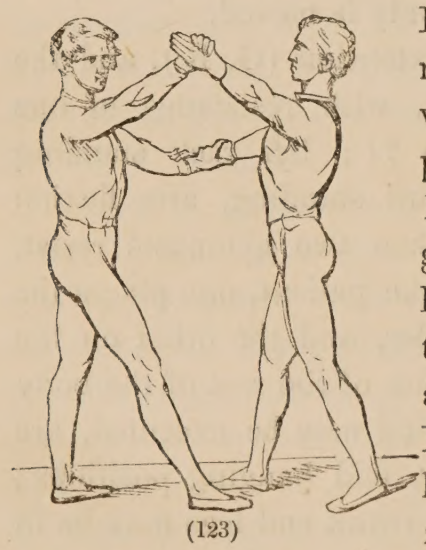


(121)

2. Rack right walk standing, arm extension (P. R.) and (G. R.), fig. 121. If the patient is strong enough, one gymnast stands in pass position before him, and places the back of his hands on the inside of the patient's stretched hands. Fig. 122 illustrates this position much clearer; the palm of the gymnast's left hand and the back of the patient's left hand are seen, the first on the inside of the patient's right hand, and the second on the back of the gymnast's right hand; when the strength of the hand is deficient, the resistance is given on the wrist joints.

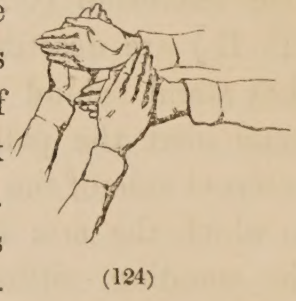


(122)



(123)

Fig. 123 illustrates one of the intermediate positions of this movement, which finishes with the arms of the patient being in yard position. Fig. 124 shows how the gymnast places his hands on those of the patient in rack arm extension (G. R.), the patient's hands in the horizontal position, are covered outside by those of the gymnast.



(124)

3. Yard standing, double arm-flexion (P. R.) and extension (G. R.), differs from the first instance by the feet of the patient being placed apart.

4. Rack pass standing, double arm extension (G. R.) and flexion (P. R.), one of the feet is placed about two or three dis-

tances forwards from the fundamental position, in which the feet are placed heel on heel at a right angle.*

5. Right rack left walk standing, arm extension (G. R.) and flexion (P. R.). The arm extension (G. R.), precedes the flexion (P. R), because the arms are bent at the shoulder joints in the commencing position—the left leg and right arm are specified by the name of the commencing position; the left leg might be placed into walk-position, while the right arm only is moved.

6. Rack chine lean, close-standing double arm-extension (P. R.). The patient leans with his chine against a horizontal bar, one gymnast places one foot transversely before the toes of the patient in close position, to prevent them from slipping, and with his hands he fixes the patient's hips; two other gymnasts stand behind the patient on the other side of the bar, place one hand on the shoulder the other on the back of the stretched hand, and execute the movement while the patient resists; the arms are brought into the rack position actively, that is, by the patient alone. The active flexion and half-active extension are alternately done three times.

7. Rack chine lean fall close standing, double arm extension (G. R.). This differs from the previous by the patient's body being in fall position.

8. Yard thigh opposite inclined-standing, double arm-flexion (P. R.). The patient leans with the anterior side of his thighs against a padded horizontal bar, while his body is inclined forwards, and the arms kept horizontally outwards.

9. Rack chine lean reclined-standing, double arm-extension (P, R.). The commencing position is similar to No. 5, only the body is reclined.

10. Yard abdomen opposite crooked standing, double arm-flexion (P. R.). The body, which is bent forwards, leans with the abdomen against a horizontal bar.

11. Yard abdomen opposite deep crooked standing, double arm flexion (P. R.). The bending of the body is more considerable than in the previous movement.

* The more detailed description of the pass position, with the engravings, may be seen at pages 127 and 144 of my book, "The Cure and Prevention of Diseases by Movements."

12. Half rack twist standing, arm extension (G. R.). Either arm may be stretched forwards, and the body twisted on either side, because neither the arm nor the side is specified, consequently the body may be in twist position to the right, and the left arm in rack position; or the contrary may take place, and the arm of the side to which the body is twisted may be in rack position. When a definite arm and side are to be used, this is especially expressed, as in the following instances; half rack, twist standing (right rack, left twist), arm extension (G. R.), which means that the movement is done successively with both arms; but when the right arm is used, the body is twisted to the left, and when the left arm is to be moved, the twist is to the right; the words "right rack twist" indicate that the right arm is used, and the body twisted first on one side and then on the other side in succession; "alternate twist" means that the movement is done while the body is twisted alternately to one and the other side; "right rack, right twist," in a parenthesis, denote that the arm of the side to which the body is twisted is used.

13. Yard span standing, arm flexion (P. R.). One arm is in yard, the other in span position, and when the movement is done three times, the position of the arms is changed, and the movement repeated three times.

14. Rack stride high kneeling, double arm extension (G. R.) The patient's knees are placed apart on an elevated level.

15. Yard inclined standing, double arm flexion (G. R.). The resisting gymnast places one hand on the shoulder, and the other on the inside of the patient's wrist joint.

16. Rack stride fall sitting, double arm extension (G. R.). The patient's knees are fixed by a third gymnast.

17. Rack oblique high sitting, double arm extension (G. R.) The patient's hips are fixed by a third gymnast, while the body is bent on one side.

18. Wing yard twist high stride sitting, arm flexion (P.R.) One gymnast executes the movements, a second stands behind the patient, and while fixing the hips, places one of his hands on the patient's hand in wing position.

19. Right yard left stretch left oblique high stride sitting,

arm flexion (P. R.). One gymnast fixes the knees, a second the hips, while the third executes the movement.

20. Right rack left angle leg-forwards-lying, arm extension (G. R.). The legs are fixed by a gymnast sitting upon them.

21. Half yard twist forward-leg-lying, arm flexion (P. R.).

22. Rack leg-lying, double arm extension (G. R.). One gymnast fixes the legs, two others, while resisting the movement, support the patient's body.

23. Wing rack twist forwards-leg-lying, arm extension (P. R.); may be done in four different ways, by changing the arms and the side to which the body is twisted.

24. Yard stem lying, arm flexion (P. R.). The patient is supported at the abdomen by one or two gymnasts, who at the same time prevent him from bending the knees, while the third gymnast executes the movement.

25. Yard swim hanging, arm flexion (P. R.). The feet and abdomen are supported by gymnasts.

26. Rack hanging, arm extension (G. R.). The patient's body is prevented from twisting by a gymnast fixing the hips, but when he becomes stronger this assistance is unnecessary.

Upper and forearm flexion

Is a flexion of the arms at the shoulder and elbow joints at the same time.

The arms of the patient in stretch-position are slowly drawn down into the heave-position, and this action is continued till the upper arms are in their whole length at the side of the trunk while the forearms are bent back on the upper arms, the gymnast resisting during the whole movement; when the resistance is made by the patient, the movement is also called *arm-down-pressure*. In this case it is advisable that the patient should slightly bend his arms in the commencing position, and special care should be taken that the shoulders of the patient should be raised as little as possible during the movement.

When the upper and forearm extension (P.R.) is done, and the arms are brought from the position, close to the trunk into the stretch position, the movement is called *guiding;* by the

same name is also designated the upper and forearm flexion, when done from the stretch position to flight position. The movement may be done with one or with both arms in a variety of commencing positions as regards the rest of the body.

Instances.—1. Stretch stride sitting, double upper and forearm flexion (G.R.) and extension (P. R.) See page 83, figs. 113, 114.

2. Right stretch right walk standing, upper-and-forearm flexion (G.R.), and extension (P.R.) See page 82, fig. 112.

3. Free standing, double upper and forearm extension (G.R.), from the position forearms bent up. The gymnast in right-walk position takes hold of the bent forearms at the wrist joints, and resists while the patient stretches both arms upwards. The dotted lines indicate the final position.

(125)

4. Stretch close standing, upper- and forearm flexion (G.R.), (fig. 125).

5. Half stretch fall stride standing, upper and fore arm flexion (G.R.) The patient's feet are placed apart (stride), he reclines with the whole body a little backwards (fall), the right arm is stretched upwards (half stretch), one gymnast stands behind him on a chair and executes the movement, while two other gymnasts standing one at each side of the patient, fix his hips, if he is unable himself to remain in the stride position.

6. Half stretch reclined walk standing, upper and forearm flexion (G.R.). This movement is done three times in succession, with one arm and leg, after which the patient changes his position, and the movement is done three times with the other arm and foot. If no limb is specified, the arm and leg on opposite sides are used.

7. Half yard walk standing, double upper and forearm flexion (active) and extension (G.R.). The arm in the horizontal position is brought forward by the patient, until the tips of the fingers touch the opposite shoulder. One gymnast fixes the shoulder with one hand and resists on the wrist joint, while the patient stretches his arm, two other gymnasts, one before the other behind the patient, fix his hips during the extension backwards, done in a horizontal line, and at the height of the shoulders. The movement can only be executed with perfect exactness by one arm at a time.

Forearm flexion and extension

Is a flexion and extension of the arms only at the elbow joints.

Instances.—1. Heave elbow support half lying, arm extension (P. R.) and (G. R) The patient sits on the flap, by which name the low operating chair with a moveable back is frequently distinguished. Two gymnasts stand one on each side of the patient, with one foot on a chair, the patient puts his elbow on their raised knees or thighs; the gymnasts fix the upper arms, and take hold of the patient's forearms, at the inner side near the wrist joint, and extend the forearms, which action the patient resists. When the forearm extension (G. R.) is done, the gymnast resists by taking hold of the wrist joint outside. The forearm flexion (G.R. and P.R.) is similar to those described, pages 13 and 14, where the commencing positions only are different.

Hand-flexion and extension

Is a flexion and extension of the hand at the wrist joint.

Instances.—1. Half-lying, double-hand flexion (P.R.), and extension (G.R.) is described page 65, fig. 92.

2. Yard stride sitting, double hand flexion (G.R.), and extension (P.R). The patient sits with his feet apart, while the knees are fixed by a gymnast, two other gymnasts standing sideways take hold of his arms, and resist while the patient moves the hands at the wrist joints, the fingers being kept stiff (hand-

flexion G.R.) from this bent position the hands are extended by the gymnast while the patient resists, and this is hand-extension (P.R.).

3. Arm support stride fall sitting, double hand flexion and extension (P.R.) and (G.R.). The flexion as well as the extension are done three times with resistance of the patient, and as often with resistance of the gymnast.

Finger-flexion and extension.

Is a flexion and extension at the finger joints alone, and is also called fist clenching and fist opening.

The finger-flexion and extension are frequently combined with the same movements of the hands. In some cases, only the thumb or one of the other fingers is acted upon. The finger-flexion and extension are done at the metacarpal joints only, or on any other of the finger joints; in all these cases, the rest of the hand must be well fixed, and any action at the wrist prevented by the gymnasts. The arms may be in yard, rack, or other positions.

Leg-flexion and extension.

Before entering into the description of these movements it is necessary to mention the bending and stretching side of the joints of the leg; while the body is upright the hip and ankle joints are bent forwards and stretched backwards, the knee and toe-joints are bent back and stretched forwards, consequently the flexions and extension of the joints vary on the anterior and posterior sides of the leg.

Flexion and extension of the hip joints alone, while the knee and ankle joints are kept stiff, is called according to the different positions in which these movements are performed, *leg-raising*, *leg-lifting*, *leg-guiding*, *leg-downwards-pressure*, and will be described under these heads.

The flexion in the hip and knee joints at the same time, in the direction upwards, is also called *knee-flexion* or *knee-upwards-pulling*. The extension of the hip and knee joints at the same time, in the direction downwards, is named *knee-extension*,

and also *knee-down-pressure.* The knee-flexion and extension are also done in different directions, as forwards, outwards, or inwards, expressed in the prescription by the words "in different planes," which words are enclosed in a parenthesis.

Instances.—1. Stretch grasp inclined reclined squat heel lean standing, knee flexion (G.R.) and extension (G.R.) See page 78, figs. 108, 109.

2. Yard squat half lying, double knee extension (P.R.), and flexion (G.R.). Two gymnasts standing one on each side and before the patient, fix with one hand the shoulders, while the other is placed on the knees.

3. Wing squat half lying, double knee extension (G.R.) and flexion (P.R.). Two gymnasts fix the hips with one hand, and place the other hand on the lowest part of the posterior side of the thigh near the knee joint.

4. Wing stride standing, double knee flexion (P.R.), and extension (G.R.). The gymnast stands behind the patient on an elevation, and reaching over him, places his hands on the hands of the patient. He then presses the slightly resisting patient down, till his knees are bent, and then the patient again, by stretching his knees, raises himself while the gymnast resists. When two gymnasts assist, they stand one on each side, and behind the patient, and place their hands on the patient's hands in wing position; they cross one of their arms in such a manner that the right hand of the gymnast standing on the left, is on the patient's right hip covered by the other gymnast's left hand; the contrary takes place on the other side, the two gymnasts may also be placed one before the other behind the patient, in which case they also mutually cover one of their hands.

5. Opposite standing double knee flexion, (G.R.) and extension (G.R.), with stomach and loin pressure. This is an instance of a half-active movement, combined with a passive, viz., the pressure in the stomach and loins, done by two gymnasts standing one on each side of the patient. They cross one of their hands on the stomach, and press the parts of the body mentioned during the whole action.

6. Speak grasp squat standing, knee extension (P.R.), with stomach pressure. Two gymnasts fix the hips and make the passive movement, while the third pushes the knee down.

7. Span grasp squat reclined standing, knee extension (P.R.)

8. Span grasp reclined half standing, knee flexion (G.R.). Nos. 7 and 8 are frequently done alternately.

9. Stretch grasp squat hanging, knee extension (P.R.), in different planes.

10 Stretch grasp hanging, knee flexion (G.R.), in different planes. Nos. 9 and 10 are also done alternately.

11. Span grasp lean squat standing, knee extension (G.R.) and (P.R.), in various plans.

12. Span grasp lean half standing, knee flexion (G.R.). Flexion and extension of the legs in the knee joints only.

Instances.—1. Air standing, knee extension (P. R) and (G.R.). The gymnast stands sideways near the leg in air position, fixes the knee with one hand, and places the other on the heel; when the extension is done by the patient, he places his hands on the anterior side of the ankle joint and resists.

2. Opposite half standing, knee flexion (G.R.). The gymnast kneels sideways near the leg, which is to be bent, prevents the knee from being pushed up and forwards, with one hand and resists with the other placed on the back of the heel.

3. Forearm support reclined air forwards lying, knee extension (P.R.). The hips and knees might be well fixed.

4. Half long sitting leg extension, and flexion (G.R.) The legs in long position, resting on a second chair, and the hips are fixed by two gymnasts, while a third executes the movement.

5. Half lying, leg-extension and flexion (G.R.). These two movements are also called *calf spanning.*

Foot flexion, and extension.

Is a flexion and extension of the legs at the foot joints

Instances.—1. High opposite standing, foot extension (P.R.)

and foot-flexion (G.R.). This is also called *instep spanning.* See description of the movement, page 76.

2. Half lying, foot flexion (G.R.) and (P.R.) and foot extension (P.R.) and (G.R.). See description of this movement, pages 67 and 68, figs. 94, 95, 96, 97.*

3. Instep support standing, knee-flexion (P.R.) and knee-extension (G.R.) The patient stands on one foot while the instep of the other leg which is bent at the knee, is on an elevated level, as in fig. 37, while the rest of the body is upright.

4. Toe support toe-standing, knee flexion (P.R.) and knee extension (G.R)† For the two last instances the patient takes hold with his hands of the high back of a chair placed in front of him, two gymnasts stand one on each side of the patient, and place each one hand on his shoulders; one gymnast places the other hand on the heel of the patient, while the second gymnast presses with his second hand on the loins, The patient bends slowly the knee of the straight standing leg, while the gymnasts press the whole body as much as the supported foot; afterwards the patient, by extension of the previously bent knee, raises himself while the gymnasts resist.

Toe flexion and extension

Being analogous to the finger flexion and extension, are usually done in lying and half lying positions, but also in some kneeling and standing positions; the patient's leg and instep must be perfectly fixed so as not to permit any movement except of the toes; the shoes must be off, and care taken that the stockings be not too short or tight, as is often the case, and which prevents the development of the moveability natural to the toes.

Instances.—1. Half-lying, toe flexion and extension (G.R.) and (P.R.). The position of the gymnast is the same as in

* Pages 179 and 180 of my book, "Prevention and Cure of Diseases by Movements."

† The commencing and final positions of the patient are engraved pp. 184 and 185 of my book, "The Prevention and Cure of Diseases by Movements."

the half-lying foot flexion and extension; the movement should be done only on one foot at a time, and the second gymnast assists in fixing the foot.

2. Half stride kneeling, toe flexion (G.R.) and extension (P.R.) The patient kneels with one leg, the other is standing on the floor.

Head-flexion.

The movements of the head in which it is bent in any direction are usually denoted by the word "flexion," as, for instance, forward-flexion, backwards-flexion, sideways-flexion, and when the head is in turn-position, oblique-forwards-flexion, oblique-backwards-flexion; or more definitely, right-oblique-forwards-flexion, and left-oblique-backwards-flexion of the head, &c. All these movements are generally executed by the patient while the gymnast resists; the word "extension," to denote a head movement in a direction opposite to a previous head flexion, is less frequently used.

Head-back flexion

Is a flexion of the head backwards.

Instances.—1. Standing-head-back flexion (G.R.). See page 86, figs. 117, 118.

2. Twist sitting, head back flexion (G.R.). The flexion being done in twist sitting position, the head is directed obliquely backwards, therefore in right twist sitting position; the back part of the head being turned to the left, the flexion is done obliquely backwards towards the upper and posterior angle of the left shoulder blade.

3. Swim hanging, head back flexion (G.R.). The patient being nearly in a horizontal position the flexion is in fact in an upwards direction, and the gymnast resists from above.

4. Stem lying, head back flexion (G.R.). is similar to the preceding as regards the head movement.

5. Stretch inclined stride-standing, head-back flexion (G R.) Weak patients must be supported by a gymnast taking hold of the stretched arm of the patient.

6. Lying, head back flexion (G.R.). With the exception of the head, the patient lies on a low couch, the head with the chin down is bent forwards, and supported by both hands of a gymnast, standing or sitting near the head; a second gymnast standing sideways, fixes the shoulders by pressing them on the couch, and a third gymnast pulls the arms down which the patient himself stretches down near his thighs.

Head forwards flexion

Is the bending of the head forwards, and may be executed in positions similar to those in which the head back flexion is done, and in many other commencing positions.

Head sideways flexion

Is the bending of the head to one side. This movement is very difficult to execute without either a slight or strong turn of the throat, so that often a head-turning is performed with it. The movement executed alternately on both sides is "alternate head sideways flexion." Head-sideways flexion means that the movement is done first three times on one side, and then as often on the other.

"Head right sideways flexion" is the movement to the right side only. "Left-head-sideways flexion" is the movement to the left only. If the head is turned to either side and then bent, the movement is called "head-oblique-backwards flexion, head-oblique-forwards flexion," and if more specified, "head-oblique-left (or right) back flexion."

In right-turn-position of the head, the sideways flexion backwards is called "head right oblique back flexion," and is done in the following manner:—The gymnast places his hands on the right side of the patient's head, and resists while the patient bends the head, the forehead being turned towards the right, to the upper and posterior angle of the right shoulder blade, in such a way that the forehead and back parts of the head are equally near to this point.

Head left oblique forwards flexion, is a flexion of the head to the left and forwards, while the head turned to the right is bent towards the left collar bone.

Instances.—1. Standing, left head flexion (P.R.) is described page 54.

2. Swim hanging, head alternate sideways flexion (G.R.). The patient must be prevented by the gymnast from moving the shoulders.

3. Stomach opposite right turn and twist deep crooked standing, head right oblique back flexion (G.R.). The body and head being bent to the right, the head bends back towards the right shoulder.

4. Left turn and twist leg stride lying, head right oblique-fore flexion (G.R.). The head is bent towards the right collar bone.

5. Speak lying, head-sideways flexion (G.R.) and (P.R.). The patient's head is resting on one of the gymnast's hands, while the other hand executes the movement; the patient's body lies on a low couch, and two gymnasts fix the shoulders and pull the arm down.

Trunk Flexion.

The terminology of the trunk flexion is analogous to that of the head flexion, the word "extension" being seldom used for the bending movements of the trunk, which are denoted by the word "flexion"; trunk flexion is made in the directions forwards, backwards, sideways, obliquely forwards, and backwards; and is called forwards, backwards, sideways, alternate-sideways flexion; right side, left side, oblique forwards, oblique backwards, right oblique forwards, left oblique backwards flexion, are the names of the various bending movements of the trunk.

The oblique trunk flexions are sideways flexions, done in a twist position; one shoulder is directed obliquely forwards or backwards. The usual flexion forwards in twist position, in which the trunk also bends obliquely forwards or backwards, while the shoulders are moved equally forwards or backwards, are called forwards and backwards flexions, or are also further defined by the addition of the word "straight." In the trunk flexion the patient usually executes the movement while the

gymnast resists; but when the gymnast executes the trunk flexion and bends his arms, the patient resists, it is called *pulling*, and *pressure* or *pushing* when his arms are stretched.

Trunk back flexion, also called back flexion.

This movement is generally executed in sitting and in long sitting positions, and combined with a raising up of the trunk into the erect position, which raising is always either active or passive.

During the back flexion the gymnasts resist, and stand in the following twenty-eight instances before or behind the patient, according to the nature of the commencing position. The patient sits with his back near one of the short edges of the flap, or of the high bench. One gymnast fixes the legs of the patient as firm as possible, and two other gymnasts place one of their hands on the back part of the head only; but when the patient is in the stretch or yard position, they place their other hands on the arms of the patient, and resist. If the patient is very weak, it is also necessary to give a support to the back, by placing the fore arm on it. The patient must execute the flexion so far that his trunk comes into the horizontal position, and the head even lower.

Instances.—1. Sitting, back-flexion (G.R.)
2. Stride-sitting, back-flexion (G.R.)
3. Twist-sitting, back-flexion (G.R.)

The patient bends obliquely backwards, and both his shoulders must be on a level. When one shoulder is lower than the other, it becomes an oblique back flexion. To distinguish between the flexions in twist position and the oblique backwards flexion, the word "straight" is added to the first.

4. Twist stride-sitting, back-flexion (G.R.)
5. Jump-sitting, back-flexion (G.R.)
6. Twist jump-sitting, back-flexion (G.R.)
7. Stretch-sitting, back-flexion (G.R.)
8. Stretch stride-sitting, back-flexion (G.R.)
9. Stretch twist sitting, back-flexion (G.R.)
10. Stretch twist stride-sitting, back-flexion (G.R.)
11. Stretch jump-sitting, back-flexion (G.R.)

12. Stretch jump twist sitting, back-flexion (G.R.)
13. Yard-sitting, back-flexion (G.R.)
14. Yard stride-sitting, back-flexion (G.R.)
15. Yard twist-sitting, back-flexion (G.R.)
16. Yard jump-sitting, back-flexion (G.R.)
17. Long-sitting, back-flexion (G.R.)
18. Long stride-sitting, back-flexion (G.R.)
19. Long twist sitting, back-flexion (G.R.)
20. Long twist stride-sitting, back-flexion (G.R.)
21. Stretch long-sitting, back-flexion (G.R.)
22. Stretch long stride-sitting, back-flexion (G.R.)
23. Stretch long twist-sitting, back-flexion (G.R.)
24. Stretch yard long-sitting, back-flexion (G.R.)
25. Half yard long-sitting, back-flexion (G.R.)
26. Yard long sitting, back-flexion (G.R.)
27. Yard-long-twist-sitting, back-flexion (G.R.)
28. Yard long twist stride-sitting, back-flexion (G.R.)

In the following five instances (29, 30, 31, 32, 33) one gymnast, standing or kneeling before the patient, fixes the hips; two other gymnasts execute the movement.

29. Chine-lean stride-standing, back-flexion (G.R.)
30. Yard-stretch chine-lean walk-standing, back-flexion (G.R.)
31. Stretch twist chine-lean close-standing, back-flexion (G.R.)
32. Left-stretch right-rest chine-lean oblique-standing, back-flexion (G.R.)
33. Close-standing, back-flexion (G.R.) One gymnast in front of the patient fixes the legs; two others standing sideways with one of their legs prevent the patient from sliding backwards. They place one of their hands covering each other, on the abdomen, while the others are placed on the occiput.

Trunk Forwards-Flexion, also called Fore-Flexion.

The patient bends the body forwards, while the gymnast resists, and raises the body actively into the original position. Two or three gymnasts are necessary in these movements. They stand at the side of the patient, and place their hands on

his chine and the anterior surface of his shoulders; or in stretch or yard position, on the arms, and support the patient, that he may be able to execute in the prescribed position the forward flexions and the active raising up of the body, which are to be done alternately three times. In the step standing positions, a gymnast sits in a stride position on a chair, and taking hold of the patient's leg in step position, places the foot between his thighs or knees on the chair, and fixes it in the step standing position.

Instances.—1. Standing, forwards-flexion (G.R.)
2. Stride-standing, forwards-flexion (G.R.)
3. Twist-standing, forwards flexion (G.R.)

In the twist position both shoulders remain at the same level. If one were lower than the other, the movement would be an oblique-forwards-flexion.

4. Yard-stretch walk-standing, forwards-flexion (G.R.)
5. Stretch stride-standing, forwards-flexion (G.R.)
6. Stretch twist-standing, forwards-flexion (G.R.)
7. Yard-standing, forwards-flexion (G.R.)
8. Yard twist-standing, forwards-flexion (G.R.)
9. Walk-standing, forwards-flexion (G.R.)
10. Stretch walk-standing, forwards-flexion (G.R.)
11. Yard walk-standing, forwards-flexion (G.R.)
12. Step twist-standing, forwards-flexion (G.R.)
13. Stretch twist step-standing, forwards-flexion (G.R.)
14. Yard twist step-standing, forwards-flexion (G.R.)
15. High opposite-standing, forwards-flexion (G.R.)
16. High opposite-stride-standing, forwards-flexion (G.R.)
17. High opposite yard-standing, forwards-flexion (G.R.)
18. High opposite stretch-standing, forwards-flexion (G.R.)

Trunk-Sideways-Flexion, or Sideways-Flexion.

The body is bent sideways by the patient into oblique position (fig. 11), while the gymnast resists, and then it is raised actively up into the commencing position. The resistance is

given either on the head or on the arm-pits, or on the lateral parts of the chest.

The various sideways flexions of the trunk are analogous to those of the head, and are called "right or left sideways flexion," "alternate-sideways-flexion," &c.

Instances of sideways flexion in free standing position; that is, where no mechanical apparatus is used during the execution of the movement:

The gymnast stands before the patient, and places one hand in the arm-pit of the bending side, and the other hand on the shoulder of the opposite side, or sometimes on the hip of that side. Fig. 13 shows the final position of "left-stretch right-wing left-walk-standing, left sideways-flexion (active)."

1. Wing-standing, sideways-flexion (G.R.)
2. Stride-standing, sideways-flexion (G.R.)
3. Walk-standing, sideways-flexion (G.R.)
4. Twist-standing, sideways-flexion (G.R.)

The patient bends the body generally to the side of the shoulder which is directed forward, and such a movement is designated by oblique-forwards-flexion. The movement done in the direction of the shoulder which is turned backwards is called oblique-backwards-flexion. If the twist is a definite one, and the movement done only on that side; as for instance, in the right-twist standing position, then we denote the sideways flexion done forward by "left-oblique-forwards-flexion"; and when the movement is done backwards, by right-oblique-backwards-flexion.

5. Twist stride-standing, sideways-flexion (G.R.)
6. Step-standing, sideways-flexion (G.R.)

The flexion is done generally in the direction of the straight-standing leg, and is then also designated by "sideways-back-flexion," and in the opposite direction by "sideways-forwards-flexion."

7. Twist foot-edge support pass-standing, sideways-flexion (G.R.) (oblique-forwards-flexion, oblique-backwards-flexion.)

The patient places the foot, whose internal edge is to be supported in at least two distances, on an elevated level.

8. Stretch-standing, sideways-flexion (G.R.)
9. Half stretch standing, sideways-flexion. The arm of the bending side is generally stretched while the gymnast resists with one hand on the stretched arm, and with the other on the shoulder of the opposite side.
10. Stretch twist-standing, sideways-flexion (G.R.), (oblique-forwards-flexion, and oblique-back-flexion.)
11. Stretch twist stride-standing, sideways-flexion (G.R.)
12. Half-stretch step-standing, sideways-flexion (G.R.), (forwards-flexion and backwards-flexion.) The flexion is done generally on the side of the straight leg.
13. Yard-stretch foot-support pass-standing, sideways-flexion (G.R.), (oblique-forwards-flexion, oblique-backwards-flexion.) The arm which is opposite to the bending side of the trunk is in yard position. The gymnast standing behind the patient presses one hand on the arm which is in yard position, and resists with the other in the arm-pit of the stretched arm.
14. Half-yard-standing, sideways-flexion (G.R.)
15. Yard step-standing, sideways-flexion (G.R.), (sideways-forwards-flexion and sideways-backwards-flexion.)
16. Half-yard foot-support pass-standing, sideways-flexion (G.R.) (oblique-forwards and oblique-backwards-flexion.)
17. Half-yard walk-standing, sideways-flexion (G.R.)

Instances of trunk-sideways-flexion in lean-standing position:

18. Chine-lean-standing, sideways-flexion (G.R.)

In the chine-lean-standing position, one gymnast standing before the patient, fixes the hips, by pressing them towards the horizontal bar against which the chine leans.

19. Chine-lean stride-standing, sideways-flexion (G.R.)
20. Half-stretch chine-lean-standing, sideways-flexion (G.R.)
21. Half-yard chine-lean-standing, sideways-flexion (G.R.)
22. Yard chine-lean-standing, alternate sideways-flexion (G.R.)

The gymnast stands behind the patient, places one hand under one forearm, the other upon the other forearm, near the elbow-joints. The patient bends first sideways towards that arm under which the hand of the gymnast is placed, and before he moves in the opposite direction, the gymnast changes the position of his hands. This flexion is done three times on each side.

23. Yard-stretch chine-lean-standing, sideways-flexion (G.R.)

The patient is in stretch position on the side on which he bends, while the other arm is in yard position.

Instances of trunk-sideways-flexion in hip-lean-standing position :—

24. Hip-lean-standing, sideways-flexion (G.R.)

In the hip-lean-standing position the patient leans with one hip against the horizontal padded bar, while the hip is fixed by a gymnast standing sideways, and pressing the body towards the bar. Weak patients, being unable to keep their legs stretched during the movement, must be assisted by a second gymnast kneeling behind the patient; frequently a third gymnast, standing on the other side of the bar, is necessary to fix the head and body in the same plane ; while the fourth gymnast, standing before the patient, executes the movements.

25. Right-hip-lean walk-standing, sideways-flexion (G.R.)
26. Left-stretch right-yard hip-lean right-walk-standing, sideways-flexion (G.R.)
27. Right-stretch left-rest left-hip-lean left-twist right-walk-standing, sideways-flexion (G.R.)
28. Left-stretch left-hip-lean right-walk-standing, left-sideways-flexion (G.R.) See figs. 119 and 120.

Instances of trunk-sideways-flexion in deep crooked standing position :—

In the deep crooked-standing position the feet and hips are fixed in a similar way as illustrated in fig. 90, in the crooked-standing trunk-raising.

28. Deep-crooked-standing, sideways-flexion (G.R.)

29. Twist deep-crooked-standing, sideways-flexion (G.R.)
30. Half-stretch deep-crooked-standing, alternate sideways-flexion (G.R.)

The gymnast takes hold of the stretched arm of the bending side of the patient, and resists.

31. Half-stretch twist deep-crooked-standing, sideways-flexion (G.R.), (oblique-forwards-flexion and oblique-backwards-flexion).
32. Half-yard deep-crooked-standing, sideways-flexion (G.R.) The arm which is opposite to the bending side is generally in yard position.
33. Half-yard twist deep-crooked-sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion)
34. Yard deep-crooked-standing, alternate-side-flexion (G.R.)
35. Yard-stretch deep-crooked-standing, sideways-flexion (G.R.)
36. Yard-stretch twist deep-crooked-standing, sideways-flexion (G.R.), oblique-forwards-flexion and oblique-backwards-flexion.

Instances of trunk-sideways-flexion in sitting-position :

The sideways flexion in the sitting position may be done also on both sides alternately.

37. Sitting, sideways-flexion (G.R.)
38. Stride-sitting, sideways-flexion (G.R.)
39. Twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
40. Twist stride-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion) fig. 126.
41. Half-stretch-sitting, sideways-flexion (G.R.)
42. Half-stretch stride sitting, sideways-flexion (G.R.)
43. Half-stretch twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
44. Half-stretch twist stride-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
45. Half-yard-sitting, sideways-flexion (G.R.)

46. Half-yard twist-sitting, sideways flexion (G.R.), (oblique forwards and oblique-backwards-flexion.)
47. Half-yard twist stride-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
48. Yard stretch oblique stride-sitting sideways-flexion (G.R.) (figs. 127-128.)

Instances of trunk-sideways-flexion in long-sitting position :—

49. Long-sitting, sideways-flexion (G.R.)
50. Long stride-sitting, sideways-flexion (G.R.)
51. Long twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
52. Long twist stride-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
53. Long half-stretch-sitting, sideways-flexion (G.R.)
54. Long half-stretch stride-sitting, sideways-flexion (G.R.)
55. Long half-stretch twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
56. Long half-stretch twist stride-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
57. Long half-yard-sitting, sideways-flexion (G.R.)
58. Long half-yard twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
59. Long yard-stretch-sitting, sideways-flexion (G.R.)
60. Long yard-stretch twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)
61. Long fall-sitting, sideways-flexion (G.R.)
62. Long fall stride-sitting, sideways-flexion (G.R.)
63. Long fall twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)

The flexion is generally done on the side which is twisted backwards.

64. Half-stretch long fall-sitting, sideways-flexion (G.R.)

The arm is stretched either on the side to which the body bends, or on the opposite side. In the latter case the gymnast presses during the flexion with one hand towards the inward directed palm of the patient's stretched hand, and places his other hand in the arm-pit of the unstretched arm.

65. Long fall half-stretch stride-sitting, sideways-flexion (G.R.)
66. Long fall yard-sitting, sideways-flexion (G.R.)
67. Long fall half-yard-sitting, sideways-flexion (G.R.)
68. Long fall half-yard twist-sitting, sideways-flexion (G.R.), (oblique-forwards and oblique-backwards-flexion.)

Instances of trunk-sideways-flexion in forwards-leg-lying position:

One gymnast sits astride on the patient's calves, and fixes them (see figs. 72, 73); another standing near the patient's head resists, by placing one hand on the shoulder of the side to which he bends, and at the same time supports the patient with the other hand placed on the other shoulder, especially if he is weak.

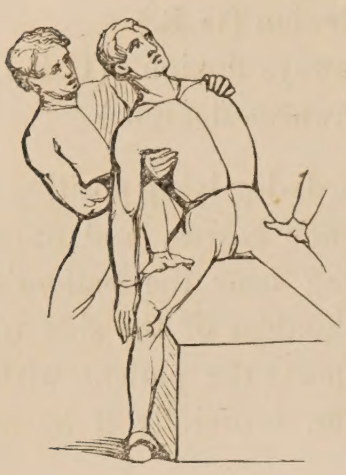
69. Reclined forwards-leg-lying, sideways-flexion (G.R.)
70. Reclined twist forwards leg-lying, sideways-flexion (G.R.), (oblique-upwards-flexion.) In this position the patient reclines obliquely-upwards and obliquely-downwards; therefore the sideways-flexion may be also called upwards and downwards-flexion.
71. Half-stretch reclined forward-leg-lying, sideways-flexion (G.R.) The arm of the bending side is generally stretched.
72. Half-stretch twist forwards-leg-lying, sideways-flexion (G.R.), (oblique-upwards and oblique-downwards flexion.)
73. Half-yard reclined forwards-leg-lying, sideways-flexion (G.R.)
74. Half-yard twist forwards-leg-lying, sideways-flexion (G.R.), (oblique-upwards and oblique-downwards-flexion.)

Instances of trunk-sideways-flexion in sideways-lying position.

In the sideways-lying position the feet, knees, and hips must be fixed by two or three gymnasts; and during the sideways-flexion, which is then an upwards or downwards-flexion, the gymnast resists slightly with one hand, supports with the other hand the patient's body, and prevents him from leaving the plane in which the flexion is done.

75. Right-angle right-sideways-lying, left-sideways-flexion (G.R.)
76. Left-angle right wing left-leg-sideways-lying, left-sideways-flexion (G.R.)

77. Wing twist leg-sideways-lying, left-sideways-flexion (G.R.), (upwards and downwards-flexion.)



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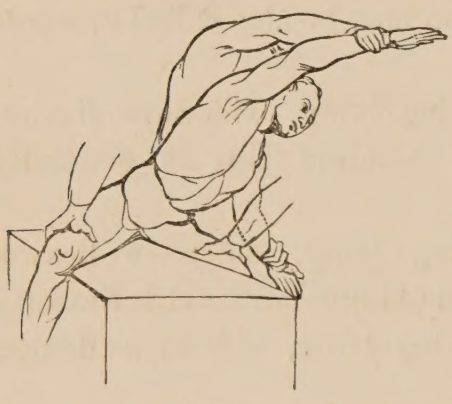
I have referred the reader to the following three figures representing *stride-sitting, side-ways-flexions,* as their detailed descriptions might be of some practical use.

78. Left twist stride-sitting, right sideways-flexion (G.R.) (fig. 126.) The patient is fixed at the thighs by a gymnast, whose hands only are shown in the engraving. A second gymnast standing behind the patient resists the right-sideways-flexion with his right hand placed in the patient's right arm-pit, and at the same time assists with his left hand placed on the left shoulder to keep the patient in the twist position.



(127)

79. Right-stretch left-yard left-twist left-oblique stride-sitting, trunk sideways flexion (G.R.) with left arm pressure (fig. 127). In the commencing position in which the patient is fixed as before, the second gymnast resists with his right stretched arm placed on the patient's right wrist, and presses with his left on the patient's left arm, in order to induce him to keep this arm in the yard position, and the body in left twist position; the patient moves only in the spine, and thus comes into the right oblique position as illustrated by (fig. 128). When this latter position is the commencing one, and the sideways flexion is done by the gymnast while the patient resists; the movement is also called *trunk sideways pulling,* because the gymnast actually pulls

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the patient's body sideways, but when fig. 126 represents the commencing position, from which a sideways flexion to the left is to be done by the gymnast, while the patient resists, the movement is called *trunk sideways pushing*, because the gymnast pushes the patient's body from himself. Many of the preceding instances of flexion and extension may consequently serve as instances both of pulling and pushing movements, the words "flexion or extension" being necessarily followed by the letters (P.R.). According as the gymnast is to pull to, or to push from him a part or the whole of the patient's body, the movement is designated as a pulling or a pushing one.

Although the preceding instances are numerous, they still form but a part of the trunk-sideways-flexion, which is a most important movement in many diseases; but I hope these instances will be sufficient to prove how rich the stock of medical gymnastics is, and that my previous statement of 2,500 movements being hitherto known is not at all exaggerated.

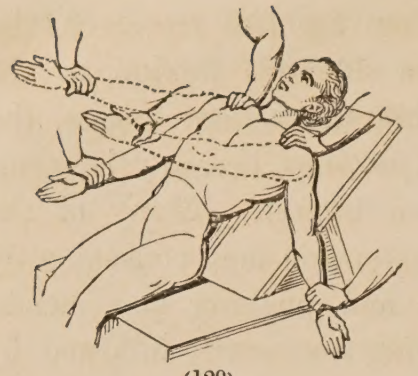
RAISING UP MOVEMENT.

Is a movement by which either a part, or the whole of the limbs, or the head, or the trunk, or several of these parts together are raised from a lower plane into a higher one; the movement is done either with resistance of the gymnast, or the patient.

Raising of the arms,

Is most commonly done from the lying position, but can be done also in standing, kneeling and sitting positions, and consists in raising the arm, which is moved only at the shoulder joints, while the arm in the elbow and wrist joints is stretched and kept perfectly stiff; several raisings of the arms are frequently designated by *arm guiding*.

Instances.—1. Speak half lying, double arm raising (G.R.) (fig. 129.) The patient moves the arms forwards and upwards to the *rack*, *yard* or *stretch* position; two gymnasts stand one on each side of the patient, whose shoulders they fix with one hand, while with the other placed on the wrist, they resist

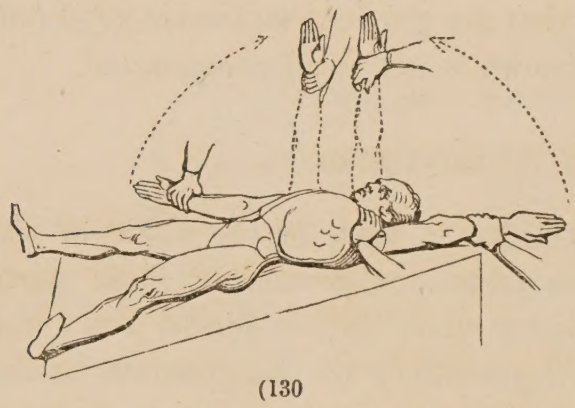


(129)

the raising of the arms; the engraving shows the commencing position, with the hands of the gymnasts placed as mentioned; the dotted arms of the patient, with the hands of the gymnast, show the final position, which is in this instance rack position.

2. Yard lying, arm raising (P.R.) Two assistants standing one on each side and near the head of the patient, raise the arms into rack-position till the patient's hands touch each other.

3. Stretch lying, arm raising (P. R.) Two assistants raise the arms into rack position, while a third fixes the body.



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4. Stretch speak lying, arm raising (G. R.) (fig. 130.) The arms are raised simultaneously till they are in rack position, and are replaced actively in the commencing position; when the movement has been done three times the position of the arms is changed, and then the movements repeated as before; the engraving exhibits *right-speak left-stretch stride-lying, arm-raising* (G.R.) (to rack position); the direction of the arrows shows how the arms are moved into the final position.

5. Right walk standing, arm raising (P.R.) Two gymnasts raise the stretched and downwards directed arms, either into *rack-*, *span-*, or *stretch-position*, according to the prescription; a third gymnast standing behind the patient fixes the body either by placing his hands on the patient's hips, or on both sides of his chest, stronger patients do not require a third gymnast.

6. Yard speak high half-sitting half-kneeling, arm-raising (fig. 131) (G.R.) One arm is brought from yard position into span

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position, the other from speak into yard position. The engraving exhibits *right-yard left-speak* commencing position, the hand of the gymnast is placed on the right arm of the patient in such a manner as is necessary to resist him, and on the left arm the hand of the gymnast is shown as placed when the patient resists, his shoulders being fixed by the hands of the gymnasts executing the movement; and on the hips are seen the hands of the third gymnast.

7. Rack- half lying, arm raising (P.R.) The arms are raised by the gymnasts into the stretch position.

Fore-arm raising,

The movement is analogous to the forearm flexion.

Instances.—1. Lying, forearm raising (G.R.) Two gymnasts standing one on each side of the patient, whose arms are stretched while the palms of the hands touch the thighs, fix with one of their hands the upper arms, and resist the movement with the other placed on the wrist joints till the forearms are in a vertical line.

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2. Standing (with the arms half forwards bent) forearm raising (G.R.) (fig. 132.) The upper arms of the patient are in yard position, the forearms are bent in a forward direction, at right angles with the upper arm, hand and fingers well stretched, palm inwards. The gymnast stands behind the patient beneath whose arms he places his arm, and takes hold from above of the wrist joints on which he presses while the forearms are raised, which is done by turning the upper arm in the shoulder joints, so that this move-

ment belongs also to the half-active arm-rotations; the engraving exhibits one of the intermediate positions, the two dotted lines the direction in which the forearms are while in the commencing position.

Hand- and finger raising.

These movements are also analogous to the various hand and finger flexions, the forearms must be perfectly fixed in the hand raisings which are done while the forearm and hand are perfectly stretched.

Instances.—1. Yard standing hand raising (G.R.)

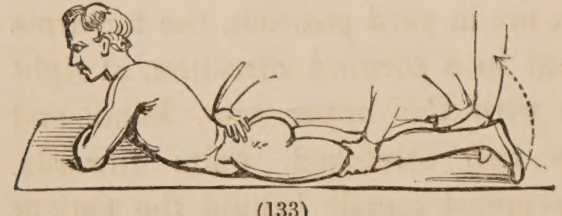
2. Rack standing hand raising (G.R.)

The finger raising is done either with the palm of the hand resting on a horizontal plane, or the hand resting with the ulnar edge only on the horizontal plane, while the fingers are spread or kept together; the gymnast resists by placing his hands either on all fingers, or on a single finger only, while the forearm and wrist as well as the metacarpus are kept perfectly immovable.

Leg raising,

Is a movement by which the leg kept perfectly stiff in the knee and ankle joints is raised upwards at the hip joint, with resistance of the gymnast or patient; several of the following instances are also designated by the name of *leg-guiding.*

Instances.—1. Lying, leg raising. (G.R.) The patient raises one leg, while the gymnast places one or more fingers on the toes of the foot to be raised, and resists very slightly; the perfectly stiff leg is raised to the height of a foot or a foot and a half above the couch.



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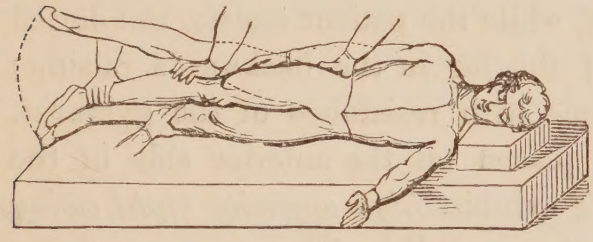
2. Forearm support reclined forwards lying, leg raising. (G.R) (fig. 133.) One gymnast fixes the body by placing one hand on the patient's chine, and the other on the leg which is resting; a second gymnast resists the leg-raising by one hand placed on the heel, while his other hand taking hold of the anterior and lowest part of the thigh, assists to keep the leg stretched, which is raised 6 to 8 inches. The engraving exhibits the commen-

cing position, while the movement is done on the left leg, which is supported above the knee by the left hand, and resisted at the heel by the right hand of the gymnast executing the movement, and standing on the left of the patient; the two hands fixing the chine and right leg belong to the gymnast standing on the right of the patient.

3. Stride lying, leg raising (P.R.) One gymnast fixes the hips, the second the resting leg, and the third, who executes the movement, places himself in a right walk crooked position, takes hold with both hands of the patient's leg, which he raises to the height of 12 to 18 inches by raising himself from the crooked into the erect position.



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4. Half rack sideways lying, leg raising. (G.R.) (fig. 134). This is properly an abduction of the leg, the arm of the side in which the patient lies is in rack position, a pillow supports the head, in order to bring it into the mesial line. One gymnast standing before the patient fixes the body by placing one hand on the uppermost hip, and the other hand below under the knee of the leg which rests; the other gymnast behind the patient resists with one hand pressing on the knee, and the other on the ankle joint while the patient raises the leg. The engraving exhibits *left-rack left sideways lying, right leg raising.* (G.R.) The right hand of the gymnast fixing the patient is shown on the hip, while the left hand is placed below the patient's left knee; the right hand of the gymnast who resists is placed on the right ankle-joint of the patient, and his left on the patient's left knee; the raised leg shows the final position.

5. Yard-grasp chine lean half standing, leg forwards raising. (G.R.) One gymnast behind the patient fixes the hips, while the other kneeling before and sideways resists the movement.

6. Hip lean close high standing, leg sideways raising. (G.R.) The patient leaning with his hip against a horizontal padded bar, is fixed by a gymnast standing near the leaning side, while another gymnast either before or behind the patient resists the movement by his hand, placed on the ankle joint.

(135)

7. High opposite swing standing leg forwards raising. (P.R.) (fig. 135.) The patient stands on an elevated level opposite a vertical plank, and takes hold with both hands at the height of the hips, of pegs projecting on each side of the plank. One gymnast standing sideways fixes the body by placing one hand on the chine bone and the other on the os pubis; a second gymnast standing behind the patient places also one hand on the chine bone, and the other on the heel, and raises the leg forwards, while the patient resists, the dotted lines show the direction of the leg in the backwards raising; when the movement is done with resistance of the gymnast, the hand of the latter is placed on the anterior side of the ankle-joint. The engraving exhibits *high opposite right swing standing, leg forwards raising* (P.R.) The gymnast fixing the body is on the patient's left; the gymnast executing the movement is shown in the final position.

Knee-raising,

Is similar to the knee upwards flexion, an instance of which is shown in fig. 108.

Heel-raising.

One or both heels are simultaneously raised, while the toes remain on the floor.

Instances.—1. Wing walk standing, heel raising. (G.R.) Two gymnasts take hold each of one foot joint by placing one hand on the back of the foot, and the other on the heel; the body is kept erect while the heels are raised from two to four inches.

2. Rectangular standing heel raising. (G.R.) The feet are at a right angle to each other, as in fig. 39.

3. Stride standing, heel raising. (G.R.)

4. Stride sitting, heel raising. (G.R.) Two gymnasts fix the toes with one hand, and with the other resist at the heel.

Foot raising.

The foot is raised while resting on the heel; this is analogous to a foot flexion. It is very difficult to execute the movement with both feet simultaneously, and therefore it is advisable to make the movement alternately with the right and left foot, in walk standing, stride standing, rest-angular, and other standing positions; the resistance is given by one hand placed on the patient's metacarpus, while the other fixes the heel.

Toe raising

Is an extension of the toes in standing position, while the foot is well fixed, and a slight resistance opposed by the gymnast's hand placed on the toes, when the patient makes the movement. Toe raising (P.R.) is best done while the foot is on an elevated level, and the toes only projecting beyond the edge of the level so as to allow the gymnast to take hold of the toes.

Head raising

Is a bending of the head either backwards, forwards, or sideways, according to the various commencing positions.

Instances.—1. Forearm support forwards lying, head raising (G.R.)

One gymnast near the patient's head resists with his hands placed transversely on the patient's occiput; a second gymnast standing sideways fixes the body by placing his hands on the shoulders.

2. Sideways lying, head raising (P.R.)

The head is raised laterally upwards by one gymnast, while a second fixes the body.

Trunk raising.

The movement consists in raising the trunk straight up, either from the inclined or fall position, and is combined in the first case with *trunk back flexion*, and in the second with a *trunk forwards flexion*. Also from the oblique position a trunk raising is done laterally, and is similar to many of the trunk *sideways flexions*. The trunk raising done from the inclined or crooked position is also called *back raising*, and the trunk, which is bent forwards, is not only raised to the vertical

but also reclined backwards, while the gymnast resists; the body is brought again into the commencing position, either passively or actively. The resistance is given by the gymnast placing his hands on the back parts of the head, or on the shoulders, or on the region of the loins. The exact place on which the resistance is offered is mentioned in the prescription, either as *head-pressure*, *shoulder-pressure*, or *loin-pressure*, and if the resistance is to be done only on one side, this is expressed by the addition of right or left to the words "head, shoulder, or loin pressure."

Instances.—1. Crooked standing, back raising (G.R.)

The patient, with his feet at a right angle and the heels close, stands with the body bent forwards and the arms hanging down; two gymnasts stand one on each side in walk position, and fix with their posterior feet the patient's feet, and place one arm on the abdomen, the other on the back of the patient's head. The hands of the gymnasts cover each other on the abdomen as well as on the head; the hands on the abdomen serve as a support, and remain fixed, while those on the head resist till the patient's body gets into the reclined position. A passive movement, called *abdomen fulling*, executed by the gymnast's hands, is sometimes combined with this movement.

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2. Stretch deep crooked stride standing, back raising (G.R.) (fig. 136).

The engraving exhibits the commencing position. Two gymnasts, standing one on each side of the patient, resist with one hand at the stretched arm, with the other on the head. The hands placed on the back of the head cover each other.

3. Crooked walk standing, back raising (G.R.)

As the foot which is to be placed in walk position is not specified, the movement is done three times, with one leg forwards, and as often with the other in walk position.

4. Crooked step standing, back raising (G.R.)

This movement is also to be done successively, first

with one foot, and then with the other, in step position.

5. Crooked heel support standing, back raising (G.R.) (fig. 137).

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The patient is bent forwards, places the heel of one foot on an elevation, and stretches his hands towards a gymnast standing or kneeling before him, who resists the raising. The engraving exhibits *crooked right heel support standing, back raising* (G.R.); the dotted lines show the final position, which is a reclining or fall position. The hands of the gymnast are placed in those of the patient; but the movement can be also executed in such a way that the gymnast takes hold of the patient's hands, at the wrist-joint, at which he pulls during the whole action.

6. Crooked twist standing, back raising (G.R.)
7. Crooked twist stride standing, back raising (G.R.)
8. Crooked twist heel support standing, back raising (G.R.)
9. Stretch crooked standing, back raising (G.R.)
10. Crooked stride standing, back raising (G.R.)
11. Half stretch crooked walk standing, back raising (G.R.)
12. Half stretch crooked step standing, back raising (G.R.)

The arm of the side on which the leg remains straight is generally stretched, one gymnast resists at the wrist of the stretched arm and at the occiput, while a second fixes the knee of the bent leg with one hand, and resists with the other also at the head.

13. Stretch crooked heel support standing, back raising (G.R.)
14. Stretch crooked twist standing, back raising (G.R.)
15. Stretch crooked twist step standing, back raising (G.R.)
16. Yard crooked standing, back raising (G.R.)
17. Yard crooked stride standing, back raising (G.R.)
18. Yard crooked walk standing, back raising (G.R.)

19. Yard crooked heel support standing, back raising (G.R.)
20. Yard crooked left step standing, back raising (G.R.)

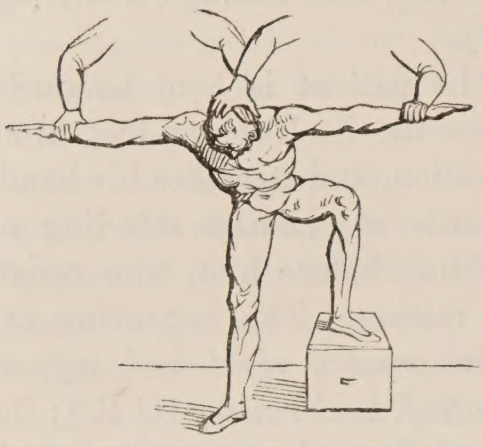

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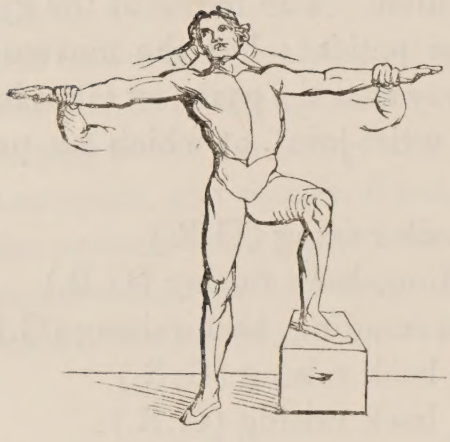
Fig. 138 exhibits the commencing position, in which two gymnasts, standing behind the crooked patient, place each a hand, one on the other, on the occiput, and the other on the wrist of the patient, and they resist while the patient raises himself into the final position (fig. 139), on which his body is reclined, while the arms and hands of the gymnasts come into the direction indicated in the drawing.



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21. Yard crooked twist step standing, back raising (G.R.)

22. Yard crooked twist step standing, back raising (G.R.)

23. Thigh lean acute crooked standing, back raising (G.R.)

Two gymnasts place their hands on the back of the head of the patient, who leans with the posterior surface of his legs against the mast (the vertical bar) (shown fig. 135), while he bends with the trunk and head almost to the floor. The gymnasts fix the hips and resist on the head and back, while the patient raises himself. When partly raised, the gymnasts cross their hands on his stomach, while they continue to resist with their other hands. After this movement a span reclined standing double arm flexion and extension is frequently used.

24. Thigh opposite deep crooked standing, back raising (G.R.)

25. Stretch thigh opposite deep crooked standing, back raising (G.R.)

Two gymnasts, standing one on each side of the patient, place one hand on the forearm and the other on the chine of the patient, who raises himself without bending the arms, or changing their position with respect to the trunk.

26. Thigh opposite yard deep crooked standing, back raising (G.R.)

27. Thigh opposite twist deep crooked standing, back raising (G.R.)

28. Stretch inclined stride sitting, back raising (G.R.) and loin pressure.

Two gymnasts, standing one on each side of the patient, resist with one hand placed on his stretched arms during the raising up, and at the same time they exert a pressure in the region of the loins with the other hands, which cross each other in this part. A third gymnast fixes the knees.

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Fig. 140 exhibits both commencing and final position of this movement, which takes place especially in the joint between the last lumbar vertebra and the chine-bone, as the pressure of the gymnasts on the loins prevents any other action; the six hands of the three gymnasts indicate the places on which the pressure in the loins, the resistance at the wrist-joints, and the fixing of the knees are done.

29. Inclined stride sitting, back raising and loin pressure (G.R.)

30. Inclined twist sitting, back raising (G.R.) and loin pressure.

31. Inclined twist stride sitting, back raising (G.R.) and loin pressure.

32. Inclined jump sitting, back raising (G.R.) and loin pressure.

33. Stretch inclined sitting, back raising (G.R.) and loin pressure.

34. Inclined sitting, back raising (G.R.) and loin pressure.

35. Stretch inclined twist sitting, back raising (G.R.) and loin pressure.

36. Stretch inclined jump sitting, back raising (G.R.) and loin pressure.

37. Half stretch inclined jump sitting, back raising (G.R.) and loin pressure.

The arms of the anterior side on which the patient sits is generally stretched.

38. Yard inclined sitting, back raising (G.R.) and loin pressure.

39. Yard inclined twist sitting, back raising (G.R.) and loin pressure.

40. Inclined half long sitting, back raising (G.R.) (in different planes).

The flexions and raisings of the trunk are done in three different directions: 1st, in the direction of the leg on which the patient sits; 2ndly, between the legs; and, 3rdly, in the direction of the leg which stands on the floor. The gymnast assists the bending of the patient, who again raises himself under resistance, while the leg on which he sits is fixed by another gymnast.

41. Opposite crooked high kneeling, trunk back raising (G.R.) with hip forwards pulling.

The patient kneels on an elevation, a gymnast stands before him, on whose shoulders he places his arms; the gymnast taking hold of him with both hands on the loins pulls his hips forwards during the raising up.

In this movement the patient does not lean forwards against a fixed object, but against the body of the gymnast (figs. 141 and 142). The engravings exhibit the commencing and final positions; in the first the gymnast, standing before the crooked patient, is in the inclined position, which he slowly changes into the reclined, while the patient raises himself up, and bends back, as shown in the final position. The hands of a

second gymnast behind the patient fix the legs by the

(141)

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heels.

42. Fall sitting, trunk raising (G.R.)

One gymnast, standing before the patient, fixes his legs, another, standing behind him, places his hands on the anterior surface of the shoulders and resists; the raising up is often combined with a forwards flexion. When the patient returns into the fall position, the gymnast supports him at the shoulders or pulls him back while the patient resists. The latter is designated in the prescription by *back pulling* (P.R.)

43. Fall stride sitting, trunk raising (G.R.)

44. Twist fall sitting, trunk raising (G.R.)

45. Twist fall stride sitting, trunk raising (G.R.)

46. Jump fall sitting, trunk raising (G.R.)

47. Stretch fall sitting, trunk raising (G.R.)

Two gymnasts, standing behind the patient, place one hand on the anterior surface of his wrist, and the other on his chine. The dotted lines in fig. 140 show the commencing position, and the other figure the final position.

48. Stretch fall twist sitting, trunk raising (G.R.)

49. Stretch fall twist jump sitting, trunk raising (G.R.)

50. Yard fall sitting, trunk raising (G.R.)

51. Yard fall twist sitting, trunk raising (G.R.)

52. Yard fall jump sitting, trunk raising (G R.)

53. Fall long sitting, trunk raising (G.R.)

54. Fall long stride sitting, trunk raising (G.R.)
55. Fall twist long sitting, trunk raising (G.R.)
56. Fall stretch long sitting, trunk raising (G.R.)
57. Stretch fall long twist sitting, trunk raising (G.R.)
58. Yard fall long sitting, trunk raising (G.R.)
59. Yard fall long twist sitting, trunk raising (G.R.)
60. Twist fall stretch walk standing, trunk raising (G.R.)

The gymnast stands behind the patient and resists with his hands placed on the patient's stretched arms, till the patient is in crooked position. The engraving (fig. 143) exhibits the commencing, and in the dotted lines the final position, and also serves to indicate, in the dotted lines, the commencing position of *stretch crooked walk standing back pulling* (P.R.) Weak patients are fixed at the hips by a second gymnast.

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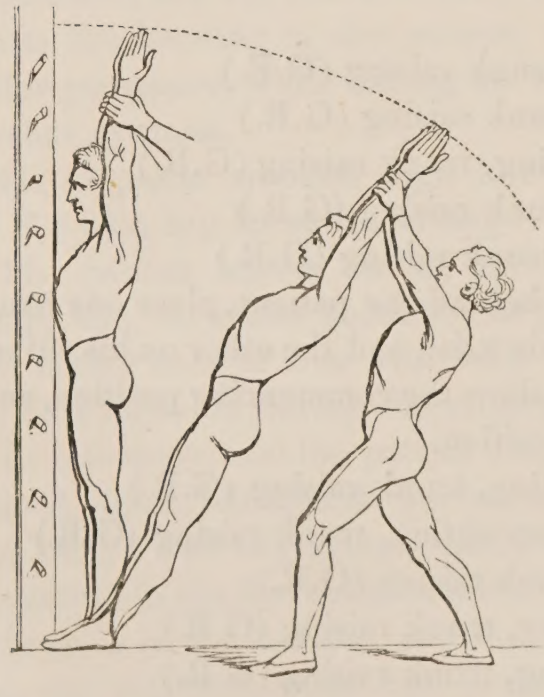
61. Stretch fall toe opposite standing, raising (P.R.)

The gymnast, standing behind the patient, as shown in fig. 144, places his hands on the upwards stretched arms of the patient, whom he raises into the erect position. This movement may also be described as a *pushing* one, as the gymnast actually pushes the patient, who resists while perfectly stiff in the whole body except the ankle-joints, in which a flexion takes place, while the foot re-



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mains fixed on the floor. If two gymnasts execute the movement, each of them places one hand on the occiput, the other on the stretched arm.

PULLING

Is a movement done by the gymnast, by which one or several parts of the patient, who is either passive or resisting, are brought or rather pulled into a direction nearer to the gymnast executing the movement.

Pulling of the arm,

With resistance of the patient, is analogous to the arm, forearm, hand and finger extensions (P.R.), but this term pulling is less frequently used to designate these movements.

In the *passive-pulling* of the arm, or of its single parts, the patient stretches, sometimes actively, the whole arm or the hand; the passive arm-pulling is also done simultaneously with other movements of the arms.

Instances.—1. Right yard left sideways lying, arm pulling (passive) with active arm rotation.

The arm, which is in this position vertical, is pulled upwards by the gymnast, who takes hold of it at the wrist, while the patient moves the stretched arm first in smaller, and by degrees in larger circles.

2. Lean stride sitting, left arm pulling.

The arm hanging down perfectly passive is pulled downwards, and as the movement is quickly repeated, it appears as if there were as many passive jerks done.

3. Half lying, finger pulling with passive rotation.

The gymnast fixes with one hand the patient's metacarpus, and takes hold with his other hand (in succession) of the single fingers, which he pulls gently, while he moves them simultaneously in circles.

Pulling of the legs or leg pulling,

With resistance of the patient, is done either on both legs simultaneously or only on one leg, but in both cases the legs are kept perfectly stiff; the double leg pulling is done up-

wards, downwards, and sideways, while the patient is in a lying or hanging position ; in a standing commencing position, the single leg pulling is done forwards, backwards, sideways ; the hips are usually fixed by one or two gymnasts.

Instances.—1. Stretch trunk lying, double leg left sideways pulling (P.R.)

One gymnast, standing on the left of the patient, places one of his knees near the left hip, his left hand on the right hip, and his right hand on the right shoulder of the patient, whose trunk is thus fixed while resisting ; the second gymnast, who takes hold of the stretched legs, pulls them to the left.

2. Trunk lying, double leg upwards pulling (P.R.)

The gymnast, who fixes the body, stands on one side of the patient, and places his hands on the patient's hips, while the second gymnast pulls upwards both stretched legs placed near each other.

3. Swim hanging, leg sideways pulling (P.R.)

The gymnast fixes the body with his hands placed on the patient's hips.

4. Horse end or saddle sitting, double leg forwards and backwards pulling (P.R.)

The patient sits quite at the end of the wooden horse, so that he would slip off if he were not fixed in that position by a gymnast sitting behind him in the saddle, and clasping his hands round the patient's body ; both legs are kept stiff at the knee and foot joints, and may be pulled either forwards or backwards. During the pulling forward the legs hang down, a little apart from each other ; at each leg stands a gymnast, taking hold of it at the foot and knee joints, and pulling it forwards and upwards while the patient resists. During the backwards pulling, both legs, bent at the hip-joints, remain stiff at the knee and foot joints, and, being placed near each other and hovering freely in the air, form with the sitting trunk of the patient a right angle. While they are pressed down by the gymnast, they are separated a little and pulled down and backwards on both sides of the horse, and the knee-joints kept as stiff as possible. This

movement is also called high stride sitting double leg downwards pressure.

5. Half lying, double leg upwards pulling (P.R.)
6. High stride sitting, double leg upwards pulling (P.R.)
7. High opposite standing, leg upwards pulling (P.R.)
8. Span reclined standing, leg upwards pulling (P.R.)
9. Half standing, leg backwards pulling (P.R.)

One leg of the patient is stretched and directed a little forwards; the patient resists while the leg is pulled backwards by the gymnast.

10. Opposite high standing, leg backwards pulling (P.R.)

Passive leg pulling is analogous to the passive arm pulling, and also combined with other movements, as leg rotation, pelvis rotation, etc.; the gymnast takes hold with both hands of the patient's leg at the ankle-joint, while a second gymnast fixes the hips.

Instances.—1. Stretch grasp high lean standing, passive left leg downwards pulling.

The gymnast fixes the body by pressing the patient's hips to the mast against which the patient leans.

2. Stretch lying, passive double leg pulling.

One gymnast presses the hips to the couch on which the patient lies; or takes hold of the patient's stretched arms, while the second gymnast executes the movement.

3. Left stride half stem lying, passive left leg pulling.

The patient is in stem-lying position, while his left foot, which is kept apart, is pulled in a horizontal direction, and in a line corresponding to the longitudinal axis of the leg; a second gymnast supports the hips.

Head pulling.

This term is less frequently used to designate passive head flexions, in which one gymnast fixes the shoulders or the arms, while a second bends the patient's head in a direction approaching it to himself. The name head pulling may be also applied to all head flexions with resistance of the patient. The instances mentioned in the article head flexion, with

change of the letters (G.R.) into (P.R.), will serve as instances of head pulling.

Trunk pulling (P.R.)

The patient resists while his body is pulled by the gymnast either backwards (*back pulling*), or forwards (*forwards pulling*), or to the side (*sideways pulling*), or obliquely forwards, or obliquely backwards

Trunk backwards pulling, commonly called *back pulling*.

The movement is done while the patient is in a standing, kneeling, or sitting position, by a gymnast standing behind the patient, who takes hold of his shoulders, or if the arms are in stretch or yard-shelter-rest-think position, he takes hold of the arms, and pulls the patient (who resists) backwards, which action is done with the greatest caution. Afterwards the patient moves his trunk forwards until it is erect, or he is passively brought into the erect position by the gymnast; the back pulling is repeated two to three times.

Instances.—1. Walk standing, back pulling (P.R.)

The patient either stands freely, or, when weak, is supported by two gymnasts at the hips.

2. Stretched walk standing, back pulling (P.R.)

The patient is not allowed to bend his arms, but must keep them immoveable in stretch position.

3. Stretch walk crooked standing, back pulling (P.R.) The dotted lines in fig. 143 show the commencing, and the other part of the engraving the final position.

4. Twist walk standing, back pulling (P.R.)

The twisting is generally done to the side of the leg which is standing backwards.

5. Right twist left walk standing, back pulling (P.R.)

The patient remains in the twist position during the whole movement.

6. Stretch twist walk standing, back pulling (P.R.)

7. Instep supporting, back pulling (P.R.)

8. Stretch instep supporting, back pulling (P.R.)

9. Twist instep supporting, back pulling (P.R.)

10. Stretch twist instep supporting, back pulling (P.R.)

11. Chine lean standing, back pulling (P.R.)

This and similar movements are frequently combined with *passive chest extension.* Two gymnasts, standing behind the patient, pull the body, by placing each one hand on the anterior surface of the shoulders, and the other on the spine between the shoulder-blades in such a way that one hand covers the other.

If the chine lean standing, back pulling is combined with the *loin pressure,* one hand of both gymnasts is placed upon the loins so that one covers the other, and these push the lumbar vertebræ of the patient forwards, while the other hands placed on the anterior surface of the shoulders pull the body back.

12. Twist chine lean standing, back pulling (P.R.)

13. Stretch chine lean stride standing, back pulling (P.R.)

14. Yard chine lean standing, back pulling (P.R.)

15. Jump standing, back pulling (P.R.)

The hips are fixed by one or two gymnasts.

16. Twist jump standing, back pulling (P.R.)

17. Stretch jump standing, back pulling (P.R.)

18. Stretch twist jump standing, back pulling (P.R.)

19. Stride kneeling, back pulling (P.R.)

This is often combined with *knee chine pressure ;* the gymnast who executes the movement stands behind the patient and presses his knee against the patient's chine, for which purpose he stands with his other foot lower than the level on which the patient kneels.

20. Twist kneeling, back pulling (P.R.)

21. Stretch kneeling, back pulling (P.R.)

22. Stretch twist kneeling, back pulling (P.R.)

23. Sitting, back pulling (P.R.)

This is combined often with *chest lifting,* which means that the gymnast executing the movement pulls at the same time both shoulders upwards, so that the whole thorax is stretched in its longitudinal axis. Sitting back pulling combined with *knee-back-pressure* is done by a gymnast standing on the same

level on which the patient sits, and pressing his knee on the back of the patient; the knee is turned a little sideways, that the sharp knee-pan may not hurt the patient during the pressure.

24. Think sitting, back pulling (P.R.)

The gymnast places his pulling hands on the elbows of the patient.

25. Twist sitting, back pulling (P.R.)

26. Stretch twist high stride sitting, back pulling (P.R.)

27. Half stretch twist high stride sitting, back pulling (P.R.)

28. Yard high stride sitting, back pulling (P.R.)

29. Long stride sitting, back pulling (P.R.)

30. Twist long sitting, back pulling (P.R.)

31. Stretch twist long sitting, back pulling (P.R.)

32. Think long sitting, back pulling (P.R.)

33. Stretch yard long stride sitting, back pulling (P.R.)

34. Jump sitting, back pulling (P.R.)

35. Twist jump sitting, back pulling (P.R.)

36. Stretch twist jump sitting, back pulling (P.R.)

37. Stretch inclined stride sitting, back pulling. Fig. 140 shows the commencing, and the dotted lines the final position.

Trunk forwards pulling, commonly called *forwards pulling*.

The gymnast pulls the patient's body forwards and a little upwards, with his hands placed either on the loins or on the pelvis of the patient, whose feet in the standing position, or the pelvis in the sitting position, and whose hands, in span-speak-grasp or stretch-position, are fixed by the aid either of the apparatus or of a second and third gymnast. The patient is either passive or resists, and does not leave the place of his commencing position, although, in the standing position, he may be raised on the toes. The patient then brings his body, especially the pelvis, into the previous position, while the gymnast, whose hands are still placed round the hips, or on the chine or loins of the patient, resists. The returning into the commencing position is also done by the patient without the resistance of the gymnast.

Instances.—1. Rack left heel support reclined standing, forwards pulling (P.R.)

The dotted lines in fig. 137 show the commencing position; the legs of the patient remain immoveable, while the gymnast standing opposite and taking hold of his arms at the wrist-joints, pulls his body forwards. The movement is done between two poles.

2. Heave grasp standing, forwards pulling (P.R.)
3. Grasp standing, forwards pulling (P.R.)
4. Yard grasp standing, forwards pulling (P.R.)
5. Stretch standing, forwards pulling (P.R.)

One gymnast in front of the patient executes the movement, while another behind him stands on a higher level than the patient, whose closed hands he fixes from above by grasping them.

6. Span standing, forwards pulling (P.R.)
7. Wing fall sitting, forwards pulling (P.R.)

A gymnast behind the patient places his hands in the armpits, and resists slightly by pulling upwards, while a second gymnast, standing in front of the patient, pulls the body forwards.

8. Fall stride sitting, forwards pulling (P.R.)
9. Stretch fall sitting, forwards pulling (P.R.)

The gymnast, standing behind the patient, places his hands on the wrist of the stretched arms, and pulls gently upwards, while the second gymnast, in front of the patient, pulls the body forwards.

Trunk sideways pulling, or sideways pulling.

The gymnast pulls the trunk of the patient, who resists, to one or alternately to both sides. When the trunk is in its most oblique position, the patient either raises himself actively or, with the assistance of the gymnast, into the erect position, then the sideways pulling is repeated two or three times. By the addition of the words *alternate, right,* or *left, obliquely forwards,* or *obliquely backwards,* the varieties of the sideways pulling are expressed; in the lying commencing positions the sideways pulling is also called *transversal,* the

oblique forwards and backwards pulling are then also called obliquely downwards and upwards pulling.

Instances.—1. Wing rest hip lean standing, sideways pulling (P.R.)

The movement is done near a horizontal bar, on one side of which the patient stands, and on the other a gymnast. The patient's arm on the free hip is in wing position, while the other arm is in rest position. The gymnast places one hand on the shoulder of the side, the arm of which is in wing position, the other hand on the elbow-joint of the patient's other arm, and pulls the patient towards himself, while a second gymnast fixes the feet of the patient, by placing his own feet against them.

2. Hip lean walk standing, sideways pulling (P.R.)

The leg of the leaning side is generally in walk position.

3. Hip lean twist standing, sideways pulling (P.R.)

The twisting is done on both sides, but generally opposite to the leaning side.

4. Hip lean half standing, sideways pulling (P.R.)

5. Half stretch hip lean standing, sideways pulling (P.R.)

The arm opposite to the leaning side is generally stretched ; the gymnast, standing on a higher level than the patient, takes hold of his stretched arm on the wrist-joint, and places the other hand on the shoulder of the other side.

6. Sitting, sideways pulling (P.R.)

The gymnast, standing behind and at the same time sideways of the patient, places his hand in the armpit of one shoulder, the other upon the other shoulder of the patient.

7. Think high stride sitting, sideways pulling (P.R.)

The patient sits on the high bench, very near the edge.

8. Inclined stride sitting, sideways pulling (P.R.)

The patient sits on the flap, one gymnast, sitting in front of him, fixes his legs, or when the movement is done on each side, two gymnasts, standing behind and sideways of the patient, cross one of their hands on the loins, and with the other hands take hold of his shoulders and armpits.

9. Twist sitting, sideways pulling (P.R.) (obliquely backwards).

10. Half stretch sitting, sideways pulling (P.R.)

The arm is generally stretched opposite to the side to which the pulling is made. The gymnast executing the movement places one hand on the wrist-joint of the patient's stretched arm, the other in the armpit of the same arm, while a second gymnast fixes the hips.

11. Half stretch twist sitting, sideways pulling (P.R.)

12. Twist long sitting, sideways pulling (P.R.)

13. Twist long half sitting, sideways pulling (P.R.)

14. Span grasp standing, sideways pulling (P.R.)

One gymnast, standing sideways of the patient, takes hold of the opposite hip with both his hands; when standing on the patient's right he places his hands on the left hip.

15. Half span grasp standing, sideways pulling (P.R.) The arm of the side on which the gymnast pulls is generally in span position.

16. Span grasp reclined standing, sideways pulling (P.R.)

17. Span grasp twist standing, sideways pulling (P.R.)

18. Speak grasp span grasp standing, sideways pulling (P.R.)

The patient stands either between two poles or near the gymnast, and grasps, in the second case, a high peg on one side, and a low one on the other, and in this position is pulled obliquely upwards and forwards.

19. Stride kneeling, sideways pulling (P.R.)

One gymnast fixes the legs, while the second pulls.

20. Twist stride kneeling, sideways pulling (P.R.)

21. Stretch stride kneeling, sideways pulling (P.R.)

22. Step standing, sideways pulling (P.R.)

The pulling is generally done to the side opposite the step standing leg.

23. Step twist standing, sideways pulling (P.R.) (obliquely backwards).

The twisting is done either towards the leg in step standing position, or the other leg.

24. Half stretch twist step standing, sideways pulling (P.R.)

The arm of the step standing side is generally stretched.

25. Thigh opposite inclined standing, sideways pulling (P.R.)

26. Stretch thigh opposite reclined standing, sideways, pulling (P.R.)

Two gymnasts, standing behind and on both sides of the patient, cross one hand on the chine, and place the other on the wrist-joints of the stretched arms.

27. Wing leg lying, sideways pulling or transverse pulling (P.R.) The trunk, in a hovering position, is kept stiff.

28. Half stretch leg lying, sideways pulling (P.R.) The arm opposite the side to which the pulling is done is generally stretched.

One or two gymnasts fix the legs of the patient lying on the high bench, a third gymnast, standing near the side where the arm is not stretched, places, while one of his arms is transversely above or below the patient's body, the hand of this arm on the armpit of the patient's stretched arm, while he, with his other hand, takes hold of the wrist-joint of the same arm.

29. Twist leg lying, sideways pulling (P.R.)

30. Half stretch twist leg lying, sideways pulling (P.R.)

31. Forward leg lying, sideways pulling (P.R.)

32. Reclined leg forwards lying, sideways pulling (P.R.)

33. Half stretch leg forwards lying, sideways pulling (P.R.)

34. Rest leg forwards lying, sideways pulling (P.R.)

35. Half yard leg forwards lying, sideways pulling (P.R.)

36. Stretch yard leg forwards lying, sideways pulling (P.R.)

Passive trunk pulling

Is done in all commencing positions mentioned in *trunk pulling* (*P.R.*) Passive upwards pulling is done frequently with other passive trunk movements, and is also called *chest lifting* or *chest heaving* (see page 141). When the upwards pulling is done simultaneously with a pull of the

shoulders outwards and backwards, it is also named *chest-spanning*.

Guiding.

Different passive and half-active movements being designated under this name, it is difficult to give an exact definition, and therefore I must refer to the description of this gymnastic operation as done on the various parts of the body.

Arm guiding.

The arms of the patient most frequently, in speak or stretch position, are kept perfectly stretched, and are moved in various directions while the patient or gymnast resists. The direction of the guiding is more definitely expressed by the addition of "*forwards and upwards*," "*backwards and upwards*," "*obliquely forwards*," etc. Several arm movements done from yard and rack position, mentioned under the head of *arm flexion and extension*, and the instances of *arm raising* illustrated page 124, figs. 129, 130, and 131, belong properly also to *arm guiding*; the operations being there minutely described, we add here only a few instances.

1. Speak standing, forwards and upwards arm guiding (P.R.) or (G.R.)
2. Speak sitting, backwards and upwards arm guiding (P.R.)
3. Speak kneeling, outwards and upwards arm guiding (G.R.)
4. Speak walk standing, right arm obliquely forwards and left arm backwards guiding (G.R.)
5. Stretch standing, outwards and downwards arm guiding (P.R.)
6. Stretch sitting, forwards and downwards arm guiding (P.R.)
7. Stretch kneeling, outwards and forwards arm guiding (P.R.)
8. Speak sitting, double arm guiding forwards and upwards (G.R.)

9. Stretch sitting, double arm guiding forwards and downwards (P.R.)

Passive double arm guiding, upwards and downwards.

The patient is in lean standing position, and his arms hanging down passively are quickly moved up and down on both sides by two gymnasts, who take hold, with one hand, of the wrist and fix with the other the patient's shoulder; the arms are thus bent at the elbow-joints, and then stretched sideways near the head, so that for a moment they are in a position similar to the handle of a vase. This movement is properly a *passive alternate forearm flexion and extension*, combined with *passive arm raising*, and is also called *double-arm throwing and twisting;* after ten or twelve movements a short pause follows, and the whole operation is repeated once or twice.

Leg guiding

Is a half-active movement of the stretched leg at the hip-joint, and is done in a similar way to the arm guiding. All the instances of flexions and extensions of the stretched leg at the hip-joint, and of *leg raising* with stretched leg and P.R. or G.R., belong also to *leg guiding*. See also fig. 135, which is the final position of *high opposite standing, leg forwards guiding* (P.R.)

Head guiding

Also called head forwards or backwards sliding, is an advancing or retreating half-active movement of the head in a horizontal direction, without any flexion of the neck; the movement is frequently combined with a slight passive raising of the chin.

Instances.—1. Sitting, head backwards guiding (P.R.), with passive lower jaw and neck heaving.

A gymnast behind the patient, with his hands placed partly on the lower jaw and partly on the neck, slightly raises the patient's head and pulls it gently backwards while the patient resists.

2. Deep crooked standing, head backwards sliding (P.R.), with passive lower jaw and neck heaving (or lifting.)

3. Stem lying, head backward (upward) sliding (P.R.), with passive lower jaw and neck heaving.

4. Stride chine lean standing, head backwards guiding (G.R.)

A gymnast in front of the patient resists with his hands placed on the occiput transversely, while the fingers are crossed.

Trunk guiding

Consists in such a slight sideways flexion of the trunk, that the shoulders still remain horizontal; in the standing position the movement is called *hip guiding*. A slightly curved arch is formed by the pelvis, the spine, and the legs on the side to which the guiding is directed, and the pelvis is moved horizontally sideways. In the sitting position, such a horizontal movement of the trunk sideways is called *trunk sideways guiding*, and in this case the spine with the pelvis form an arch, the most convex point of which is in the lower dorsal vertebræ, while in the hip guiding this point is in the pelvis. This movement differs from the ordinary sideways flexions of the trunk in this: that in the latter the pelvis and the legs remain perpendicular, while the flexion takes place in the spine only. The gymnast must be very careful to prevent the patient from making a trunk sideways flexion instead of the trunk guiding, which is done either to the right or left, and in the stem or span sideways lying positions upwards and downwards. The gymnast resists on the side towards which the patient moves the trunk; the movement is done less frequently with resistance of the patient.

Instances.—1. Standing, hip guiding (G.R.)

The gymnast stands on one side of the patient, and resists by placing both hands on the hip of the side to which the guiding is done.

2. Walk standing, hip guiding (G.R.)

The guiding is done generally to the side the foot of which is in walk standing position.

3. Step standing, hip guiding (G.R.)

The guiding is done to the side where the leg is straight.

4. Half yard step standing, hip guiding (G.R.)

The arm of the side the leg of which is step standing, is in yard position. The gymnast gently presses one hand on the arm in yard position, and resists with his other hand placed on the hip-bone of the opposite side towards which the guiding is done.

5. Half yard walk standing, hip guiding (G.R.)

6. Deep crooked standing, hip guiding (G.R.)

7. Stretch deep crooked standing, hip guiding (G.R.)

Two gymnasts, each placing one hand on the wrist-joints, and the other on the hip of the patient, support him in the position, while the gymnast on the side of whom the guiding is done resists.

8. Yard deep crooked standing, hip guiding (G.R.)

9. Stretch yard deep crooked standing, hip guiding (G.R.)

10. Span reclined standing, hip guiding (G.R)

11. Span reclining, hip guiding (G.R.)

12. Half stretch sideways falling, hip guiding (G.R.)

The fall position is done on that side the arm of which is stretched, but the guiding can be done on both sides.

13. Span yard sideways falling, hip guiding (G.R.)

The arm of the side to which the guiding is directed, is in span position, while the trunk is in falling position on that side the arm of which is in yard position.

14. Sitting, sideways guiding (G.R.)

15. Stride sitting, sideways guiding (G.R.)

16. Half stretch sitting, sideways guiding (G.R.)

17. Forwards leg lying, hip guiding (G.R.)

One gymnast stands near the head of the patient, and with his hands slightly supports his shoulders.

18. Sideways stem lying, hip guiding (G.R.)

The patient pushes the hip which is uppermost still higher, or the hip which is directed downwards still lower.

Turning and Twisting

Are movements of the limbs or of the head, or of the trunk,

in which a turning to and fro on their relative longitudinal axis takes place. These movements differ from the rotation or rolling in this: that in the latter a cone of a considerable size is described by the moved part; the apex of which cone is at the part attached to the rest of the body, and the base at the free end.

Arm twisting or arm turning (with resistance).

The arm, in yard, speak, rack, or stretch position, is kept perfectly stretched, and moved to and fro at the shoulder-joint, while the patient or gymnast resists.

Forearm twisting (with resistance).

The forearms with the hands are moved to and fro, while the upper arms are fixed; the forearms are alternately in supination or pronation. The movement is done in shelter, think, rest, and other arm positions.

Passive arm, forearm, and finger twisting.

The whole arm or the single part of the arm is quickly turned to and fro by the gymnast ten or twelve times, while the patient is perfectly passive. After a short pause the movement is repeated, with short intervals, two or three times, so that twenty-four or thirty-six alternate twistings of the indicated part are done. The upper arm is fixed during the forearm twisting, and the metacarpus is fixed during the twisting of the fingers.

Instance.—Half lying, double forearm twisting (passive).

The gymnasts fix the upper arm of the patient with one hand, and guide with the other, placed on the patient's wrist, the forearm quickly from supination into pronation.

Leg, knee, and foot twisting

Is either a half-active or passive movement; the twisting is done at the hip-joint, and in a slight degree in the knee-joint when this is bent, and in the ankle-joint. The resistance is given either by the patient or the gymnast. The twisting in one direction, either inwards or outwards, is

often a passive or active movement, while the twisting in the opposite direction is half-active. Sometimes the gymnast resists while the leg is twisted outwards, and the patient resists while the twist is done inwards; or the contrary takes place.

Instance.—1. Stride lying, right leg twisting (G.R.)

The patient's leg, resting with its posterior side on the couch, is stretched, the foot-joint well bent, so that the toes are at least at a right angle with the leg. One gymnast fixes the hips, a second places one hand above the knee and prevents it from bending, while he simultaneously resists with this hand, as well as with his other, placed above the ankle-joint.

2. Stretch grasp lean high standing, left leg outward twisting (G.R.)

The twisting inwards is either active or passive, and the gymnast resists only during the twisting outwards.

3. Swing half lying, double leg twisting (passive).

Two gymnasts, one on each side of the patient, take hold each of one stretched leg, which they slightly pull sideways, and turn alternately in and out, meanwhile the patient is passive.

4. Lying, leg twisting (passive).

The movement is first done on one leg and then on the other, and not simultaneously, as in the previous instance.

5. Half kneeling, knee twisting (passive).

The patient stands on one leg on the floor, and kneels on the other, on the edge of the couch, in such a manner that the lower leg and foot are hovering in the air; which parts the gymnast, standing behind the patient, quickly turns to and fro.

6. Half kneeliug, foot twisting (passive).

The patient is in a similar position as in the previous instance; but the foot only hovers in the air, and the to and fro movement takes place in the foot-joint only.

Head turning and head twisting.

The movement is either half-active or passive. The

head is turned alternately to the right and left, as far as the joint between the atlas and the second vertebra permits this motion, while the rest of the spine remains immoveable; in the head twisting, the upper part of the spine participates also in the movement, and the head can be more twisted. The *head turning* and *head twisting* differ from each other by the spine being immoveable in the turning, while the upper part of the spine participates in the twisting.

Instances.—1. High stride sitting, head turning (G.R.)
2. Inclined standing, head twisting (G.R.)
3. Stride sitting, head turning (P.R.)
4. Stem lying, head turning (G.R.)
5. Lying, head turning (passive).

The head projects beyond the couch on which the patient lies, and is turned to and fro by the gymnast ten to twelve times towards one side; after a pause, as often to the other, and after another pause, alternately on both sides.

Trunk turning and twisting.

The body is turned to the right or left, and the whole spine participates in the movement. The engravings 99, 100 (page 70), and the engravings 110, 111 (page 80), illustrate this movement, which is most frequently used as a half-active one, and in some of its varieties as a passive movement.

Plain turning.

The patient, being passive, is turned by the gymnast into the twist position (fig. 23, page 25), and with his trunk still in the vertical position, returns into the commencing position, while the gymnast resists, with one hand placed on the anterior surface of the shoulder which is turned backwards, and with the other placed on the posterior surface of the shoulder which is turned forwards.

The plain turning is done only three times to one side, and as often to the other.

Plain turning to the right or to the left means that the movement is done only on the designated side.

Instances.—1. Yard ledge, standing plain turning (G.R.) (See page 80, figs. 110, 111.)

2. Stride standing, plain turning (G.R.)

The pelvis is fixed by one or two gymnasts.

3. Walk standing, plain turning (G.R.)

4. Step standing, plain turning (G.R.)

5. Stride curtsey standing, plain turning (G.R.)

6. Half stretch standing, plain turning (G.R.)

The gymnast resists with the hand placed on the stretched arm of the patient.

7. Half stretch step standing, plain turning (G.R.)

8. Half yard standing, plain turning (G.R.)

The gymnast resists on the arm which is in yard position, and on the side which the patient turns forward.

9. Yard standing, plain turning (G.R.)

10. Stretch span standing plain turning (G.R.)

The movement is done while two gymnasts standing, behind the patient, place one hand on his chine, and the other on the stretched forearms of the patient.

11. Yard span standing, plain turning (G.R.)

12. Stretch span grasp reclined standing, plain turning (G.R.)

The patient takes hold, with the hand in span position, of a peg, as the movement is done near the rack; one of the two gymnasts, who stand on each side of the patient, places one hand on the chine, the other between the shoulder-blade of the patient whom he supports, while the other gymnast places one hand on the chine, the other on the stretched forearm of the patient.

13. Half shelter walk standing, plain turning (G.R.)

14. Half shelter step standing, plain turning (G.R.)

15. Stretch span grasp kick reclined standing, plain turning (G.R.)

The foot which is opposite the stretched arm is generally in kick position; two gymnasts, standing one on each side of the patient, place one of their hands on his chine, and the

other hand is placed by one gymnast on the stretched forearm, and by the other on the thigh of the leg in kick position.

16. Span kick reclined, plain turning (G.R.)

Two gymnasts, standing one on each side of the patient, place one of their hands crossed on his chine, the other on his shoulder-blade. A third gymnast takes hold of the foot of the patient with both hands. The turning in this movement is done only in the pelvis, as the shoulders are fixed, and is properly a *hip turning.*

17. Chine lean standing, plain turning (G.R.)

One gymnast in front of the patient fixes his hips, while the second resists.

18. Chine lean stride standing, plain turning (G.R.)

19. Stretch chine lean standing, plain turning (G.R.)

One gymnast stands before, and another behind the patient; the first fixes with his feet the patient's feet, and with his hands the patient's hips; while the second gymnast, standing on an elevation, resists with both hands placed on the wrist-joints of the patient.

20. Half stretch chine lean standing, plain turning (G.R.)

The patient turns the stretched side forwards, while the gymnast, who stands behind him, places one hand on the stretched forearm, and the other on the shoulder of the other arm.

21. Yard chine lean standing, plain turning (G.R.)

A gymnast, standing behind the patient, takes hold of both his forearms and resists during the turning, or presses the arms downwards, in which latter case the movement is distinguished by the addition of *double arm pressure.* The other gymnast fixes the feet and hips.

22. Half yard chine lean standing, plain turning (G.R.)

23. Wing instep supporting, plain turning (G.R.)

24. Half stretch instep supporting, plain turning (G.R.)

25. Half shelter instep supporting, plain turning (G.R.)

26 Half yard instep supporting, plain turning (G.R.)

27. Calf lean reclined stride standing, plain turning (G.R.)

28. Rack grasp opposite standing, plain turning (G.R.)

The patient facing the rack, standing very near it, bends the arms slightly at the elbow, and places his hands on two pegs at the height of his hips; two gymnasts, one on each side, cross one of their hands on the chine or between the shoulder-blades of the patient, which is designated by the expression *chine*, or *loin*, or *double shoulder-blade pressure*. One gymnast places his second hand on the anterior side of one shoulder, while the second hand of the other gymnast is placed on the posterior side of the other shoulder.

29. Stretch rack grasp opposite standing, plain turning (G.R.)

Two gymnasts stand, one on each side of the patient, and one of them places one hand on his stretched forearm.

30. Rack grasp yard opposite standing, plain turning (G.R.)

31. Wing thigh opposite crooked standing, plain turning (G.R.)

One gymnast, standing before him, places one of his hands on the anterior side of one shoulder, and the other hand on the posterior side of the other. A second gymnast, standing behind the patient, fixes with his feet those of the patient.

32. Stretch thigh opposite crooked standing, plain turning (G.R.)

Two gymnasts, standing behind the patient and a little in the rear, fix his feet, by placing each of them one foot against the heel of the patient; they place one of their hands crossed on the chine of the patient, and each of them takes hold with the other hand of one stretched forearm of the patient.

33. Half stretch thigh opposite crooked standing, plain turning (G.R.)

One gymnast stands before, and another behind the patient; the first takes hold of the patient on one shoulder

and on the stretched forearm, while the other fixes the feet.

34. Yard crooked thigh opposite standing, plain turning (G.R.)

One gymnast, standing in front of the patient, takes hold of one arm on its anterior side, of the other on its posterior side, while a second gymnast fixes the feet of the patient.

35. Deep crooked standing, plain turning (G.R.)

One gymnast, sitting before the patient, resists by pulling towards himself the arms of the patient, which hang down freely.

36. Wing kneeling, plain turning (G.R.)

One gymnast fixes the hips, while the second, standing behind the patient, resists.

37. Stride kneeling, plain turning (G.R.)

The gymnast places one of his feet between the feet of the patient, so that his knee, which touches the chine, also presses on it during the movement; in the prescription this is expressed by *chine pressure.*

38. Stretch stride kneeling, plain turning (G.R.)

The gymnast stands on the same level on which the patient kneels, places one of his feet between the lower legs, and his knee on the chine. He then takes hold of both stretched forearms of the patient, and resists by pulling them simultaneously slightly upwards.

39. Half stretch stride kneeling, plain turning (G.R.)

40. Shelter stride kneeling, plain turning (G.R.)

The gymnast places his hands on the upward turned palms of the patient, and presses them.

41. Wing high stride sitting, plain turning (G.R.) (figs. 99 and 100).

42. Stride sitting, plain turning (G.R.)

43. Half stretch sitting, plain turning (G.R.)

44. Stretch sitting, plain turning (G.R.)

45. Shelter sitting, plain turning (G.R.)

46. Yard sitting, plain turning (G.R.)

47. Half yard sitting, plain turning (G.R.)

48. Inclined stride sitting, plain turning (G.R.)

The gymnast, standing before the patient, places one hand on one shoulder-blade, the other on the other shoulder. This movement may be done also by two gymnasts standing one on each side of the patient, and placing one hand on the chine, while the other, placed on the shoulders, resists.

49. Stretch inclined stride sitting, plain turning (G.R.)

50. Half stretch inclined stride sitting, plain turning (G.R.)

51. Shelter inclined stride sitting, plain turning (G.R.)

52. Half shelter reclined stride sitting, plain turning (G.R.)

53. Yard inclined stride sitting, plain turning (G.R.)

54. Half yard inclined stride sitting, plain turning (G.R.)

55. Yard stretch inclined stride sitting, plain turning (G.R.)

56. Fall stride sitting, plain turning (G.R.)

The patient sits on, and with his face turned to the flap, so that his seat is near its edge, and the trunk hovers in an oblique direction backwards and upwards. Two gymnasts fix the legs of the patient; a third stands behind, and places his hands on the shoulders of the patient, and resists without supporting him.

57. Stretch fall sitting, plain turning (G.R.)

58. Half stretch fall sitting, plain turning (G.R.)

59. Shelter fall sitting, plain turning (G.R.)

60. Half shelter fall sitting, plain turning (G.R.)

61. Yard fall sitting, plain turning (G.R.)

62. Half yard fall sitting, plain turning (G.R.)

63. Jump sitting, plain turning (G.R.)

The patient makes the plain turning towards that side of the body the thigh of which rests perfectly on the flap.

64. Half stretch jump sitting, plain turning (G.R.)

The arm of that side which the patient turns forwards is stretched.

65. Opposite sitting, plain turning (G.R.)

The arms of the patient, in rack position, are directed towards the gymnast, who stands before him.

66. Opposite inclined sitting, plain turning (G.R.)

67. Long sitting, plain turning (G.R.)

68. Half stretch long stride sitting, plain turning (G.R.)

69. Half stretch long sitting, plain turning (G.R.)

70. Shelter long sitting, plain turning (G.R.)

71. Yard long sitting, plain turning (G.R.)

72. Fall long sitting, plain turning (G.R.)

73. Shelter fall long sitting, plain turning (G.R.)

74. Yard fall long sitting, plain turning (G.R.)

75. Rest wing leg lying, plain turning (G.R.)

The legs of the patient on the high couch are fixed, either by the hands of the gymnast, or, when sitting astride on them, by the weight of his body. One gymnast stands near the head of the patient, whose trunk is almost in a half lying position, supports him with his chest, or with one of his shoulders, and places one of his arms through the aperture which is formed by the arm resting with the hand on the neck, and reaches with the hand of this arm down to the hip of the patient. The gymnast then places his other arm transversely on the back of the patient, so as to support him during the movement.

76. Half stretch reclined leg lying, plain turning (G.R.)

The patient is fixed, as in the previous instance. The gymnast, near the head of the patient, stands a little nearer that side on which the arm is not stretched, and places one of his forearms transversely on the back of the patient, and the hand of that arm on the lower angle of the shoulder-blade of the stretched arm; with the other hand he takes hold, at the wrist-joint, of the patient's stretched arm, which he slightly pulls, while resisting the patient's return into the commencing position.

77. Leg lying, plain turning (G.R.)

78. Half stretch leg lying, plain turning (G.R.)

This and the previous movement are done on the high couch.

79. Wing reclined leg forwards lying, plain turning (G.R.)

80. Stretch reclined leg forwards lying, plain turning (G.R.)

One gymnast fixes the legs, two others, standing one on each side of the patient's head, cross one of their hands placed on his chine, which they press, and pull with the other his stretched arms, at the wrist-joints.

81. Shelter reclined leg forwards lying, plain turning (G.R.)

The gymnast, who resists, presses during the turning towards the palms of the patient's hands.

82. Half shelter reclined leg forwards lying, plain turning (G.R.)

83. Yard reclined leg forwards lying, plain turning (G.R.)

84. Half yard leg forwards lying, plain turning (G.R.)

85. Stretch stem lying, plain turning (G.R.)

If the patient is strong, only one gymnast is necessary, who stands sideways, and partly under the patient, whose arm is stretched on the side on which the gymnast stands; this supports the abdomen of the patient with one hand, and with the other takes hold of the patient's stretched arm.

86. Yard stem lying, plain turning (G.R.)

87. Stretch swim hanging, plain turning (G.R.)

Two gymnasts fix the legs, a third supports the abdomen, while he takes hold of the hand of the fourth gymnast, standing on the other side of the patient. This last gymnast takes hold, with his second hand, of the patient's stretched arm at the wrist-joint, and resists during the turning.

88. Yard swim hanging, plain turning (G.R.)

89. Half wing half stem lying, plain turning (G.R.)

90. Half wing half swim hanging, plain turning (G.R.)

Alternate trunk twisting.

The alternate turning differs from the plain turning in this: that no *passive* turning of the patient is done, but the patient himself turns alternately one of the shoulders for-

wards, while the gymnast resists. This movement is done in all the various commencing positions mentioned in the plain turning.

Trunk forwards and backwards twisting.

The twisting forwards is done by the patient, who is in twist position, moving one shoulder forwards, while the gymnast resists; and as soon as the shoulder has attained the most forward point, the back-twisting is done by the gymnast into the previous position, while the patient resists. The forwards twisting is done three times with one shoulder, and as often with the other shoulder.

The backwards twisting is very similar to the forwards twisting. The patient twists the shoulder (which, by the commencing twist position, is brought forwards) backwards, while the gymnast resists. The forwards twisting is done by the gymnast, while the patient resists.

Arch twisting.

The trunk is twisted, and in oblique position towards the side the shoulder of which is first twisted. In the arch twisting of the right shoulder, the patient is in oblique position to the right, and is twisted by the gymnast so far backwards, that the left side of his body is almost the anterior; the backwards twisting is either active or passive, and from this commencing position the patient twists his right shoulder forwards, and raises his body into the vertical position, while the gymnast resists. The movement is done three times on one side, and as often on the other.

Trunk contortion

Is similar to the arch twisting, with this difference: that the backwards twisting is passive, and the forwards twisting is done in the oblique position by the patient, while the gymnast resists. The movement differs from the trunk forwards twisting by the oblique position only.

Hip twisting

Is similar to the plain or alternate trunk twisting; but as the hands, generally in yard grasp or span grasp position, as well as the feet, are fixed, the twisting takes place principally at the hips and pelvis; the gymnast standing behind the patient, one hand on the exterior and posterior surface of one hip, and the other hand in front of the other hip, so that the tips of the fingers reach the groin and the anterior surface of the patient's thigh.

Instances.—1. Span grasp standing, hip twisting (G.R.)

2. Span grasp reclined standing, hip twisting (G.R.)

The gymnast, by a slight pressure forwards, assists the patient to remain in the reclined position.

3. Span grasp inclined reclined lean heel standing, hip twisting (G.R.)

The patient stands with his heels on the pegs of the rack, with his back towards the rack, while his hands assist him to keep the inclined reclined position. The gymnast, standing before the patient, places one hand on the chine, while he resists with the other placed on the hip, which is twisted forwards by the patient.

4. Span grasp reclining, hip twisting.

The movement is done at the rack. Two gymnasts stand one on each side of the patient, whose feet they fix with their feet. One hand of both gymnasts is placed across the chine, the other hand of one gymnast on the anterior side of one hip, while the other hand of the second gymnast is placed on the posterior side of the other hip.

5. Heave standing, hip twisting (G.R.)

6. Heave reclined standing, hip twisting (G.R.)

7. Yard standing, hip twisting (G.R.)

8. Yard reclined standing, hip twisting (G.R.)

9. Tumble standing, hip twisting (G.R.)

The gymnast stands on the side of the patient.

10. Stem lying, hip twisting (G.R.)

The patient is so high in the span lying position, that the gymnast standing at his side is able to support him with one of

his forearms, placed transversely on the patient's abdomen, while he resists with his hands placed on the patient's hips.

11. Swim hanging, hip twisting (G.R.)

12. Arch lying, hip twisting (G.R.)

Two gymnasts stand one on each side, and assist by placing each of them one hand on the chine, while they resist with their other at the hips.

13. Head-heel lying, hip twisting (G.R.)

14. Yard head-heel lying, hip twisting (G.R.)

Passive trunk twisting.

Screw-throw and circle twisting.

As in all passive movements, all those parts which are not to be moved must be fixed as much as possible, either by the aid of the gymnast or of the apparatus.

The screw twisting is a perfectly passive alternate twisting, executed by two gymnasts, standing one on each side of the patient, on whose chine or back they place one of their hands, and the other on his elbows. The patient's arms are in wing position. The trunk is quickly twisted ten to fifteen times, without intervals, round its longitudinal axis, so that first one and then the other elbow is alternately directed forwards and backwards. After a short pause of some seconds, the gymnasts repeat the movement, and, after a second pause, it is repeated a third time. A passive and quick trunk forwards and backwards flexion, repeated two or three times, precedes and follows the screw twisting.

Instances.—1. Wing high stride sitting, trunk screw twisting.

2. Wing stride chine lean standing, trunk screw twisting.

One gymnast fixes the legs, two others execute the movement.

3. Wing trunk walk high kneeling, trunk screw twisting.

Trunk throw twisting

Is similar to the screw twisting, but the trunk is twisted as far as possible forwards and backwards, and one of the gym-

nasts, after each twisting, ceases to hold the elbow of the patient for a second or two, so that the trunk, by the impulse communicated by the other gymnast, returns passively into the previous position. The gymnasts alternately cease holding the elbows, so that while one elbow of the patient is kept firm, the other swings freely.

Instance.—Wing forwards stomach horizontal lying, trunk throw twisting.

The patient, on his stomach, lies across a horizontal padded bar, two or two and a half feet from the ground, in such a way that the legs hover on one side, and the chest, neck, and head on the other. The gymnast takes hold of his legs, and thus fixes the body, while the spine is kept stiff. A second gymnast, standing in the angle formed by the bar and the side of the trunk and head of the patient, takes hold of his shoulder or elbow. He then twists the body first towards himself, so that the face of the patient is turned to him, and then quickly throws him, as it were, back in the opposite direction, and upwards. This movement is repeated three or four times.

Trunk circular twisting.

This is a perfectly passive arch twisting. The trunk of the patient is in oblique and twist position. The gymnast takes hold of the lower shoulder, and makes the arch twisting, first in an obliquely backward direction, and ultimately forwards, while the other side of the body remains continually more or less stretched. This movement is done with one side only, or with both, six or eight times to one side, and as often to the other. After a short pause, the movement is repeated three or four times on each side.

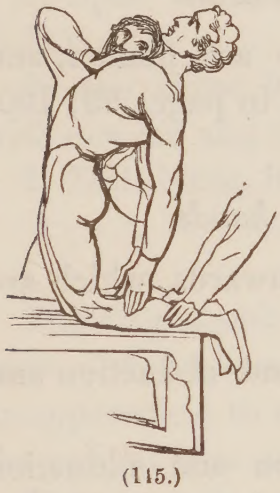
FELLING.

This expression is used to designate a half-active movement of the trunk, in which the thorax falls back, while the abdomen, and especially the pelvis, protrude strongly forwards. By this movement, done principally in the kneeling

position, the body of the patient is brought into a curve, the highest point of which is formed by the pelvis.

Instances.—1. Kneeling, back felling (P.R.)

The patient kneels on the flap, his legs are fixed by a gymnast, standing behind him. Two other gymnasts stand one on each side of the patient, and place one hand on the anterior surface of the shoulder; the other hands are crossed on the loins of the patient, who puts both his arms on the neck and shoulders of the two gymnasts at his side. His trunk is then bent backwards, while he resists slightly.



(115.)

Fig. 145 is one of the intermediate positions of the patient, and of one of the gymnasts. The arms of the patient are hanging down, and the gymnast on the left omitted, in order to show better the convex position into which the patient's body is brought by the hands of the gymnasts.

2. Stride kneeling, back felling (P.R.)

3. Stride twist kneeling, back felling (P.R.)

4. Half stretch stride kneeling, back felling (P.R.)

The gymnasts place those hands which, in the previous movements, were on the shoulders on the anterior surface of the wrist of the patient's arm, which is in stretch position.

5. Half stretch twist stride kneeling, back felling (P.R.)

6. Stretch twist stride kneeling, back felling (P.R.)

7. Yard stride kneeling, back felling (P.R.)

The gymnasts place one of their hands on the anterior surface of the wrist of the patient's arm.

8. Stretch yard stride kneeling, back felling (P.R.)

Inclination.

Is a movement by which the whole body of the patient, or its upper part only, is brought into positions similar to those described in the commencing positions, as *inclining* and *inclined standing* positions (see page 21). The term *inclination*

is but little used, and instead of it the words, "trunk forwards flexion," or other terms are employed.

ABDUCTION (OR SEPARATION), ADDUCTION, AND DIVISION,

Are movements of the arms or legs, in which the upper or lower limbs approach to or recede from each other, or from the mesial longitudinal line of the body. *Separation* means the removing, and *adduction* the approaching of the limbs, and *division* the two movements executed one after the other.

Abduction and adduction of the arms

Are analogous to the arm extension, the arm flexion, and several varieties of arm guiding, described in pages 99, 100, and 147.

Abduction and adduction of the hands

Are flexions of the hands outwards or inwards, which are done with one hand at the time.

Instances.—1. Right rack half lying, hand abduction and adduction (P.R. or G.R.)

2. Elbow support sitting, hand abduction and adduction (P.R.)

3. Lean standing, double hand abduction and adduction (passive).

Abduction and adduction of the fingers.

The separating and bringing together the fingers of one hand is done while either the gymnast or patient resists.

Leg division.

The stretched legs are generally removed from each other by the gymnasts while the patient resists, and then they are brought together by the patient while the gymnasts resist.

When the movement is done, as just described, three times, it is repeated three times with resistance of the gymnasts during the separation, and with resistance of the patient during the adduction; thus *leg division* (P.R. and G.R.) will signify a sixfold abduction and adduction, with

alternate resistance of the patient and gymnast. Generally the division is done with both legs at the same time, sometimes only with one leg, while the other is kept immoveable by the gymnast.

Instances.—1. Half lying, double leg division (P.R. and G.R.)

2. High short sitting, leg division (P.R. and G.R.)

3. Swim hanging, leg division (P.R. and G.R.)

4. Stem lying, leg division (P.R. and G.R.)

5. Roof hanging, leg division (P.R. and G.R.)

6. Span reclined kick standing, leg division (P.R. and G.R.)

In the three last instances, the movement is first done with one leg and then with the other.

7. Half lying, leg separation (G.R.) (See fig. 86, page 55.)

Knee division.

The thighs and legs of the patient are bent at the knee-joint, and the knees, but not the feet, are to be removed from or approached to each other, so that, during the separation, the patient is in curtsey position.

The execution of the movement is similar to leg division (P.R. and G.R.)

Instances.—1. Squat half lying, knee division (P.R. and G.R.)

2. Squat roof hanging, knee division (P.R. and G.R.)

3. Squat standing, knee division (with one knee) (P.R. and G.R.)

4. Step standing, knee adduction (P.R.) and abduction (G.R.)

5. Arch short close sitting, knee separation (G.R.) (See fig. 88, page 55.)

PRESSURE.

This term designates movements with resistance of the patient, and also passive movements.

Pressure with resistance of the patient

Is a movement of considerable portions of the patient's body,

done by the hands of the gymnast pressing on them while the patient resists.

Pressure on the arms downwards (P.R.)

Is an upper and forearm flexion while the patient resists; the arms are in stretch position, except the hands, which are directed outwards, and with the palms upwards. The gymnast, standing behind the patient, places his hands on those of the patient, whose arms he presses slowly and steadily downwards, in such a way, that the upper and forearms, when bent at the elbows, are placed close to the sides of the patient, who resists but little. The patient then raises his arms again into the stretch position, and the movement is repeated a second and a third time. During the pressure downwards the patient must not be allowed to direct his elbows backwards or forwards, but must keep them constantly in the lateral direction.

Instances.—1. Stretch standing, double arm downwards pressure (P.R.)

2. Stretch inclined thigh opposite standing, double arm downwards pressure (P.R.)

3. Half stretch fall chine lean standing, arm downwards pressure (P.R.)

4. Stretch fall stride kneeling, double arm downwards pressure (P.R.)

5. Right stretch fall high stride sitting, right arm downwards pressure (P.R.)

6. Stretch reclined leg forwards lying, double arm downwards pressure (P.R.)

7. Stretch leg lying, double arm downwards pressure (P.R.)

8. Stretch twist high stride sitting, double arm downwards pressure (P.R.)

Pressure on the legs (P.R.)

The pressure is done either downwards, upwards, forwards, and inwards, on the perfectly stretched leg of the patient, who resists. The leg is moved in the hip-joint only; the

movement is analogous to *leg pulling*, where the pressure is substituted by the pulling hand of the gymnast. Some instances of *leg guiding* are also similar to the leg pressure.

Instances.—1. Half lying, leg downwards pressure (P.R.)

The patient lies on the flap, and raises one perfectly stretched leg to the height of twelve to fifteen inches above the level of the flap. The pressure downwards is done by the gymnast's hand placed on the ankle-joint.*

2. High kick short sitting, leg downwards pressure (P.R.)

The patient, sitting on the high couch, places one leg, bent at the knee, on a low chair, while the other, in kick position, is pressed down by the gymnast.

3. High lean kick standing, leg downwards pressure (P.R.)

4. Span kick standing, leg downwards pressure (P.R.)

5. Span reclined kick standing, leg downwards pressure (P.R.)

6. Vault half leg stem lying, downwards pressure (P.R.)

The patient is in the span frame, face upwards; one leg is in the sling, while the other, which is stretched, is kept a little upwards, and pressed down by the gymnast.

7. Kick backwards rocking, leg downwards pressure (P.R.)

8. Horse end sitting, double leg downwards pressure (P.R.)

Similar to leg *backwards pulling*, mentioned at page 138.

9. Tumble standing, leg downwards pressure (P.R.)

10. Half leg stem lying, leg downwards pressure (P.R.)

* The couch or chair, with a moveable part, on which the upper part of the body and the head rest, as seen in figs. 67 and 69, is called the *flap*; by raising or lowering this moveable part, the patient can be placed very comfortably, and if a horizontal couch is wanted, the moveable part is lowered to the horizontal level. A drawing and description of such a *flap* is to be found at page 258 of my "Prevention and Cure of Diseases by Movements." At pages 183 and 186 of the same book is seen the *high couch* or *high bench*; at page 259, the *span frame* or *stretching frame*. The *horizontal padded bar*, which can be raised or lowered in the frame, is seen at pages 165 and 181; the mast with the pegs, at pages 166 and 168. Mr. Brown, of 25, Hardington Street, Portman Market, Edgware Road, is a manufacturer of the various apparatus necessary for the treatment of diseases by medico-gymnastic operations.

11. High trunk lying, leg upwards pressure (P.R.)

The upper part of the patient's body rests on the high couch; the leg is stretched and kept perfectly stiff, while the gymnast presses it upwards and the patient resists.

12. High opposite swing standing, leg forwards pressure (P.R.)

A gymnast standing behind the patient, whose stretched leg is in swing position, presses the leg forwards, while the patient resists (see fig. 135).

13. Half lying, leg inwards pressure (P.R.)

One leg, in stride position, is stretched and is pressed by the gymnast towards the other leg, or towards the longitudinal axis of the body, while the patient resists.

14. High stride sitting, leg inwards pressure (P.R.)

15. Swim hanging, leg inwards pressure (P.R.)

16. Span kick half stride high standing, leg inwards pressure (P.R.)

The leg, in kick position, is directed obliquely outwards, and thus in stride or more properly, in half stride position.

17. Span reclined kick half stride standing, leg inwards pressure (P.R.)

18. High opposite half stride standing, leg inwards pressure (P.R.)

19. Stem half stride lying, leg inwards pressure (P.R.)

20. Sideways stem half stride lying, leg inwards pressure (P.R.)

The patient, lying sideways in the span frame, stretches one leg sideways and upwards, and resists while it is pressed by the gymnast towards the other leg.

Pressure on the trunk (P.R.)

The trunk of the patient is moved forwards or downwards, backwards, and sideways, by the hands of the gymnast placed on the trunk, while the patient resists. As the backwards and sideways pressure is so similar to the *trunk backwards and sideways pulling* (P.R.), in which the movement is effected by the pulling, but not pressing, hands of the gym-

nast, we refer the reader to the chapter *trunk pulling*, page 140, etc.

Forwards pressure on the trunk (P.R.)

The trunk of the patient, who resists, is pressed forwards by the gymnast standing behind him; the patient returns into the commencing position, without resistance of the gymnast.

Instances.—1. Wing standing, forwards pressure (P.R.)

Two gymnasts, standing one on each side of the patient, place one of their hands on his hips, the other (one covering the other) with the forearms on the head and on the back of the patient, whom they press forwards by the head, while they fix his hips.

2. Stretch standing, forwards pressure (P.R.)

One gymnast, standing before the patient, fixes the hips; two other gymnasts, standing behind and sideways of the patient, place each of them, one of their hands and forearms in the same way as in No. 1, the other hand on the wrist-joints of the stretched arms, which remain, during the movement, in the same direction with regard to the trunk.

3. Yard standing, forwards pressure (P.R.)

4. Think standing, forwards pressure (P.R.)

5. Shelter standing, forwards pressure (P.R.)

6. Rest standing, forwards pressure (P.R.)

7. Heave standing, forwards pressure (P.R.)

8. Thigh opposite reclined standing, forwards pressure (P.R.)

Two gymnasts stand behind the patient, and place their hands as in No. 1; they press the trunk forwards, while they place their feet against the heels of the patient to fix them.

9. Thigh opposite reclined stride standing, forwards pressure (P.R.)

10. Thigh opposite twist stride standing, forwards pressure (P.R.)

Both shoulders remain, with regard to the hips and legs, in the same position in which they were brought by the twist position, and neither shoulder must be moved more forward than the other during the movement.

11. High sitting, forwards pressure (P.R.)

The legs of the patient, sitting on the high bench or the flap, are fixed by one gymnast, while two others, standing behind and beside him, place their hands as in the standing forwards pressure, and press the trunk forward.

12. Stride sitting, forwards pressure (P.R.)

13. Stretch sitting, forwards pressure (P.R.)

14. Twist sitting, forwards pressure (P.R.)

15. Stretch stride sitting, forwards pressure (P.R.)

16. Think twist stride sitting, forwards pressure (P.R.)

17. Half stretch stride sitting, forwards pressure (P.R.)

One gymnast stands behind the patient, and places one hand on the wrist of the stretched arm, the other hand on the shoulder of the other side.

18. Fall stride sitting, forwards pressure (P.R.)

19. Stretch fall stride sitting, forwards pressure (P.R.)

20. Stretch fall twist stride sitting, forwards pressure (P.R.)

21. Half stretch fall stride sitting, forwards pressure (P.R.)

22. Long sitting, forwards pressure (P.R.)

23. Stretch fall long sitting, forwards pressure (P.R.)

24. Yard long fall sitting, forwards pressure (P.R.)

25. Leg lying, forwards (or upwards) pressure (P.R.)

The patient's legs are fixed by one or two gymnasts, while two others place their hands on the back of the head and on the shoulders of the patient, whose trunk they press first upwards and then forwards, so as to place him at first upright and then into a crooked position.

26. Stretch leg lying, forwards (or upwards) pressure (P.R.)

Downwards pressure on the trunk (P.R.)

This movement is done only in leg forwards lying position. The patient lies with the legs, as far as the abdomen, on the high bench, the trunk hovering in the air, the legs are fixed by a gymnast sitting astride them; at the head of the patient, whose face is directed downwards, stands a second gymnast, who presses the trunk of the resisting patient

downwards, so that his head approaches the floor. The gymnast places his hands on the back of the patient's head, or on his shoulders, or on his arms, when in stretch or yard position. In the half stretch and twist positions, the arm of that side of the trunk which is become the upper one by the twist, is stretched; in twist position, the *downwards pressure* may be executed in such a way that the shoulders remain in the direction in which the twist position has placed them, or so that one shoulder is lower than the other. This latter mode is called *oblique downwards pressure*, or, more definitely, *right* or *left oblique downwards pressure*. When the patient is pressed down to the lowest point, the gymnast assists his return into his previous position; the movement is then repeated two or three times.

Instances.—1. Forwards leg lying, downwards pressure (P.R.)

2. Reclined forwards leg lying, downwards pressure (P.R.)

3. Twist forwards leg lying, downwards pressure, or oblique downwards pressure (P.R.)

4. Twist stretch forwards leg lying, downwards pressure, or oblique downwards pressure (P.R.)

5. Stretch reclined forwards leg lying, downwards pressure (P.R.)

6. Half stretch twist forwards leg lying, downwards or oblique downwards pressure (P.R.)

7. Yard reclined forwards leg lying, downwards pressure (P.R.)

8. Half yard reclined forwards leg lying, downwards pressure (P.R.)

9. Stretch yard reclined forwards leg lying, downwards pressure (P.R.)

10. Think reclined forwards leg lying, downwards pressure (P.R.)

11. Rest reclined forwards leg lying, downwards pressure (P.R.)

12. Twist forwards leg lying, downwards or oblique downwards pressure (P.R.)

Downwards pressure on the hip (P.R.)

Is a trunk downwards pressure, in the stem lying and tumble standing positions.

Instances.—1. Stem sideways lying, hip downwards pressure (P.R.)

The gymnast stands before or behind the patient lying in the span frame, and places one of his hands on the upper, the other on the lower hip of the patient, and presses them down in a straight direction, while the patient resists.

2. Tumble standing, hip downwards pressure (P.R.)

One gymnast stands at the side of the patient, and, with both hands placed on his chine, presses especially the pelvis down, while the patient resists.

3. Star stem lying, hip downwards pressure (P.R.)

Pressure on the whole body (P.R.), also called *up pressure,*

Is done in fall-position only, and is similar to *trunk raising* (P.R.) See fig. 144, page 136, which shows the patient in stretch-fall foot opposite standing position. The stretched and falling body of the patient is supported by one or two gymnasts standing behind him. The two gymnasts raise, or rather press upwards, the resisting patient, for which purpose they place their supporting and raising hands only on the back of the head, or, if the patient is in stretch position, on the head and wrist-joints of the stretched arms; but their hands must not be placed on the chine or on the hips, except in very weak patients, who cannot keep the body stiff.

Instances.—1. Foot opposite falling, up pressure (P.R.)
2. Stretch foot opposite falling, up pressure (P.R.)
3. Yard foot opposite falling, up pressure (P.R.)
4. Think foot opposite falling, up pressure (P.R.)
5. Shelter foot opposite falling, up pressure (P.R.)
6. Rest foot opposite falling, up pressure (P.R.)
7. Heaving foot opposite falling, up pressure (P.R.)
8. Star foot opposite falling, up pressure (P.R.)

Passive pressure.

The whole body of the patient is passive, or, at least, the

parts on which the pressure is made. Generally the hand, sometimes the knee of the gymnast is used to press with; less frequently some wooden or brass instruments, tourniquets, pincers, etc., are used. The passive pressure is done either on the veins, or on the nerves, or on extensive regions of the body, and on the organs contained in them.

Passive pressure on the veins.

On superficial veins the pressure is done by one finger; on deep-seated veins by several fingers, or by the tips of the fingers of both hands of the gymnast, which are kept together in such a way that the fingers of one hand touch those of the other with the nail surface, and form a wedge, which is pressed deep into the organic substance.

If several or very large venous trunks are to be pressed, the flat hand of the gymnast, or both his hands, and even the hands of three or four gymnasts, are used. If several and smaller veins of the limbs are to be pressed, a bandage or a screw-tourniquet is used. The pressure lasts several seconds, half a minute, or, when we use the tourniquet, even longer, to five minutes. The pressure with the fingers and hands is generally repeated three times, at short intervals, and sometimes oftener; the pressure with the fingers and hands is gradually increased, and, after attaining its maximum, it continues for some time, and then gradually lessens and ceases. Only in rare cases, especially in the so-called *let pressure*, the force of the gymnast, after attaining the maximum pressure, suddenly ceases. When the pressure is made on the veins, the pressing finger remains always on the same place; the part on which the pressure acts must be as much as possible relaxed, especially during the pressure on veins which are situated very deep in the cavities of the body.

Passive pressure on the internal jugular vein.

The gymnast, placing his hand immediately underneath the angle of the patient's lower jaw, takes hold of the soft parts of the external covering, the platysma-myoides and

the sterno-cleido mastoideus, grasping and squeezing them with the fingers of one hand, so that the thumb comes on the anterior surface, and two or three fingers on the posterior surface of these parts. The patient opens his mouth, that the muscles of his face may be relaxed, and the head is slightly bent forwards, in order to relax the fasciæ of the throat.

When the pressure is done on both sides of the throat, which is designated as *double jugular vein pressure*, the face of the patient soon becomes flushed, and the veins swell. The pressure is continued till the conjunctiva of the sclerotica is very much injected; as soon as this is the case, the pressure must cease, or giddiness, faintness, or even worse consequences may ensue.

Instances.—1. Free standing, double jugular vein pressure.

2. Stride sitting, jugular vein pressure.

3. Left sideways half lying, left jugular vein pressure.

4. Span standing, double jugular vein pressure.

5. Left stretch right oblique stride sitting, right jugular vein pressure.

6. Fall chine lean standing, double jugular vein pressure.

7. Half lying, double jugular vein pressure, with leg separation (G.R.)

Passive pressure on the temporal vein.

One or two fingers are placed, with the tips immediately upon the middle of the zygmoid arch, on the region of the temples, where the superficial and the deep temporal veins meet; when the pressure is made on both temples at the same time, the tips of the fingers are kept turning in a half circle, as if boring; with this movement a vibration is often combined.

Instances.—1. Sitting, double temporal vein pressure.

The word *double* designates that the pressure is done simultaneously on both temples.

2. Leg lying, double temporal vein pressure.

3. Stem lying, double temporal vein pressure.

4. Star stem lying, double temporal vein pressure.

5. Span standing, double temporal vein pressure, and head backwards flexion (G.R.)

6. Stretch inclined stride sitting, temporal vein pressure, and arm flexion (G.R.)

Pressure on the axillary vein.

This is done either by the fingers of the gymnast, or by the tourniquet. If a tourniquet is used, it is applied as high as possible on the arm, without any pad, and the instrument is slowly tightened by turning the screw, until the patient feels pain. The tourniquet is used from two to five minutes. The arms must be perfectly passive, and either hang down freely, or rest on a support. Other passive movements, as, for instance, vibration, twisting, pulling, etc., may be used simultaneously.

Instances.—1. Half lying, right axillary vein pressure.

2. Left sideways half lying, left axillary vein pressure (tourniquet three minutes).

3. Stride sitting, double axillary vein pressure.

4. Half lying, right axillary vein pressure, with right leg raising (G.R.)

5. Fall chine lean standing, double axillary vein pressure, with trunk raising (G.R.)

Pressure on the crural vein.

The patient is in sitting lying, or half-lying position; the pressure is made in the inguinal region, where the crural vein descends on the horizontal branch of the os pubis, by pressing with the fingers, or by a tourniquet applied very high on the thigh.

Pressure on the lower vena cava.

The patient is in squat lying or squat half-lying position, and the gymnast places both his hands, with the backs of the fingers towards each other, in the form of a wedge; that is, the nails of the fingers touch each other, while the back of the carpus and metacarpus are a little more distant from each other. The fingers kept stiff, and with the tips pressed

as deep as possible into the relaxed abdomen, a little to the right of the navel, are kept for several seconds to half a minute in this position.

Pressure on the nerves.

The part on which the pressure is made must have either a thin layer of soft parts, or its covering must be as much as possible relaxed, while the rest of the patient's body may be in different positions. The pressure on the nerves is done by the fingers of the gymnast, not kept perfectly quiet, as in the pressure of the veins, but slightly moved to and fro. As soon as the pressing fingers produce pain in the nerves, the gymnast continues the pressure for several seconds without increasing its intensity. He then removes his fingers, and, after a pause of a few seconds, he repeats the pressure; and so a third and fourth time. In parts where the nervous trunks are covered with a thick layer of muscles, in addition to the fingers of the gymnast, round wooden rods, a foot long and an inch thick, with blunt ends are used. If single nervous loops are to be pressed, a particular nipping instrument of brass or wood is used.

Pressure on the second and third branches of the nervus trigeminus.

The patient pushes his lower jaw forwards, and in a direction opposite to the side on which the pressure is made. The gymnast next places the tips of one or two fingers, which are kept a little bent, in the space behind the branch of the lower jaw, so that the nail surface of the finger is directed towards the processus mammiformis and the musculus sterno-cleido mastoideus, the internal surface being directed towards the branch of the lower jaw; the tips of the fingers are pressed inwards and a little forwards, so as almost to surround the branch of the jaw, which is perfectly passive during the pressure; this is repeated five to six times, or even oftener, at short intervals.

Pressure on the nervus vagus and phrenicus.

A place on the throat nearer to the sternum than to the os hyoideum, in the course of the nervus vagus, is pressed by the crooked fingers of one hand of the gymnast, who, with the fingers from behind, takes hold of the sternal portion of the sterno-cleido mastoideus, relaxed by a head-sideways-flexion of the patient in half-lying position, who breathes very deep while the gymnast makes the pressure. As the nervus phrenicus is in the immediate neighbourhood of the vagus, the pressure influences it also at the same time.

Instances.—1. Half lying, double vagus pressure.

2. Lean standing, double vagus pressure.

3. Squat half lying, double vagus pressure, with double leg extension (G.R.)

4. High long sitting, double vagus pressure, with trunk backwards flexion (G.R.)

Pressure on the brachial plexus

Is done by four fingers of the gymnast, two of which are placed above and two below the clavicle of the half lying patient.

Pressure of the sciatic nerve.

The obtuse end of the round wooden rod is placed midway between the great trochanter and the tuberosity of the ischium. The gymnast takes hold of the rod with both hands, one of which grasps it near one end, and the other is placed with the palm on the other end, with the fingers surrounding it.

Instances.—1. Opposite inclined reclined stride standing, sciatic nerve pressure.

The gymnast stands sideways of the patient, and looks in the direction opposite to that to which the patient is directed; he places one of his legs between the legs of the patient, in such a way that a large part of the anterior surface of it is directed towards the anterior surface of one leg of the patient, and supports it. Generally, a second gymnast

stands in a similar way on the other side of the patient, and supports the other leg. A boring movement is given to the rod, by turning the upper end in a small circle quickly and frequently, so that it describes a cone, the point of which is that end of the rod which is bored inwards, while the base is at the other end.

After ten or fifteen circles are made, a pause of several seconds follows, and the movement is repeated two or three times.

2. Forwards lying, double sciatic nerve pressure.

The pressure is made on both sciatic nerves at the same time.

Pressure on the popliteal nerve

(146.)

Is done at the back of the knee-joint, in the bend, while the patient is in half-lying position. The gymnast takes hold with his hand of the patient's knee, and places the tips of several fingers, which are crooked, on the middle of the back part of the knee, and continues the pressure until a slight pain is felt. Fig. 146 shows the position of the operator's hand during this pressure.

Pressure on the solar plexus.

The patient is in squat half-lying position. The gymnast stands sideways of the patient, and presses slowly and deeply into the abdomen with both hands (the fingers of which are crooked, and kept in a line near each other), immediately below the pit of the stomach; at the same time he slightly moves the fingers to and fro, until the patient complains of pain. The palms of the hands are directed towards the face of the patient. The pain produced by the pressure is, in some complaints, and especially in the beginning of the treatment, very violent; gradually it becomes less, until it disappears entirely with the return of health; so that the

gymnast, without causing the slightest pain, may press his fingers almost to the vertebral column.

In crooked standing, solar plexus pressure, the gymnast stands behind the patient, on a little elevation, so that he reaches over the patient, and leans on his back, and placse both his arms on the patient's shoulders, and the hands, in the way described, boring into the relaxed abdomen.

Pressure on the plexus sacralis, also called sacral plexus pressure.

The patient is in squat half-lying position, the gymnast stands sideways near his feet, and places his hands together, so that the little and ring fingers are near each other, while the thumbs are a few inches distant, and the hands lean together in the form of a wedge; the fingers are straight. The hands, kept together in this way, bore with the tips of the fingers into the relaxed abdomen of the patient, immediately above the os pubis, and so far inwards, that the tips of the fingers press as deep as possible into the true pelvis. The pressure lasts several seconds, and is repeated at short intervals three or four times, but must never be made strong enough to pain the patient.

Pressure on single nervous filaments and on single nervous loops

Is done with an instrument similar to a pair of forceps, provided with a screw, in order to give it the necessary position; the two branches must have a blunt end, half an inch wide, made of metal, and covered inside with some woollen material, in order to moderate the pressure. With such an instrument the skin is held, as deep as possible, in the place where the pain is felt, the fold of skin is squeezed by the two branches screwed together, and the closed instrument may hang a few minutes, or even as long as a quarter of an hour, on the skin. The pressure may be repeated several times a day.

Pressures on extensive regions of the body

Are generally done with the palm of the hand, or by the tips of the fingers, and, less frequently, by the knee. When the tips of the fingers are used, they are placed not on one point, but on several, so that the pressure is extended over a large surface. The application of the tourniquet, of ligatures, or bandages on the limbs, if our intention is not to compress a single vein, belongs to these pressures. In the pressures of more extensive regions of the body two kinds are discernible, according to the effects to be produced. In the one the pressure is done by one or two hands of the gymnast, placed near each other, or, less frequently, by his knee, but always with a view to fix the patient in his position, and to support him. To this belong the head-shoulder-armpit-back-arm, loin-chine pressures, which are often done simultaneously with duplicated movements. When the placing of the hands of the gymnast is more definitely named, without the intention of producing absorption, the pressures are almost always done on one side of a part, and are designated as *position pressures*. A pressure on two opposite or on all sides of a part is done to produce absorption, and is called *general absorption pressure.*

Position pressure on the head, also called head pressure.

The gymnast places one hand, with the palm on the back of the head, and *there* the resistance is to be given.

Instances.—1. Stomach opposite standing, back flexion (G.R.), with head pressure.

2. Stride twist sitting, trunk back flexion (G.R.), with head pressure.

3. Crooked step standing, trunk back raising (G.R.), with head pressure.

4. Chine lean crooked standing, trunk back raising (G.R.), with head pressure.

5. Stride sitting, trunk forwards pressure (P.R.), with head pressure.

6. Fall long sitting, forwards pressure (P.R.), with head pressure.

Position pressures on the shoulders, shoulder-blades, back, chest, loins, chine, hips, and arms.

These are expressed on the prescription by the addition of the word *pressure* to the part of the body on which it is to be done; for instance, shoulder pressure, shoulder-blade pressure, back pressure, etc., etc.

The chine of the patient is sometimes pressed, not by the hand of the gymnast, but by his knee; the patient is either in stretch sitting or in stretch kneeling position, while the gymnast, who stands behind him on the seat, places his knee on the chine, on which it presses, while he simultaneously takes hold of the stretched arms of the patient; this pressure is called *knee chine pressure.*

Back pressure means that the gymnast places his hands between the shoulder-blades, on the spine of the patient; and in

Hip pressure, the hand is placed on the upper edge of the hip-bone.

In *arm pressure,* the hand of the gymnast is placed on the patient's arm, which is in stretch or yard position, and remains immoveable.

Instances.—1. Right stretch left walk standing, trunk back flexion (G.R.), with arm pressure.

2. Stretch sitting, trunk back flexion (G.R.), with double arm and shoulder-blade pressure.

Both hands and both shoulder-blades of the patient are pressed by two gymnasts standing behind him, resisting with their hands during the back flexion of the patient.

3. Long right twist sitting, trunk back flexion (G.R.), with head and right shoulder-blade pressure.

4. Inclined sitting, trunk back raising (G.R.), with loin pressure.

5. Yard inclined sitting, back raising (G.R.), with loin pressure.

6. Half stretch standing, sideways flexion (G.R.), with arm pressure.

7. Step standing, right hip guiding (G.R.), with right hip pressure.

8. Stretch stride kneeling, plain turning (G.R.), with knee chine pressure.

9. Shelter stride kneeling, plain turning (G.R.), with arm pressure.

10. Half stretch opposite standing, back twisting (G.R.), with shoulder back pressure.

One gymnast, standing near the arm of the patient which is not stretched, places one hand on the shoulder, the other between the shoulder-blades, and while the patient makes the movement, presses the shoulder backwards and the back inwards, so that the chest protrudes very much. The other gymnast, who resists during the back twisting, places one hand on the wrist of the stretched arm of the patient, and the other on the other shoulder.

11. Yard opposite standing forwards twisting (G.R.), with shoulder and loin pressure.

One gymnast, near the arm which is not in yard position, places one hand on the shoulder, the other on the loins of the patient, and presses with one hand the shoulder backwards, and, with the other, the loin forwards.

General absorption pressures

Are done generally on two opposite or more sides, so that some part of the body is pressed, and the absorption consequently increased. To these belong the absorption pressures on the head (forehead and back of the head pressure), the back and stomach, stomach and loin, abdomen and loin, abdomen and chine, and the *let-off pressure.*

Absorption pressure on the head.

The patient is sitting, the gymnast places the palms of his hands on the forehead and back of the patient's head, and presses tolerably strong for some seconds; after a pause of a few seconds, the pressure is repeated two or three times. This is also called *forehead neck pressure.*

Another head pressure is done by the gymnast placing both

hands, with the fingers a little crooked and the nails towards and very near each other, while the back of the fingers are a little more distant from each other, on the top of the patient's head; the tips of the fingers are pressed for several seconds on the parietal surfaces, and then one hand is turned forwards, the other quickly backwards, so that, as in the previous head pressure, the forehead and the back part of the head may be squeezed by the palms of the hands. The top pressure is repeated three or four times, with intervals of a few seconds. This kind of pressure is called *point pressure on the top,* with *forehead neck pressure.* Generally, these are combined with other passive movements, especially chopping, sawing, stroking, and vibration of the head; but they are very seldom combined with half-active movements.

Absorption pressure on the stomach and loin, on the back and stomach, on the abdomen and chine, on the abdomen and loin.

One or two gymnasts place their hands, covering each other partly or entirely, on that region of the body which is specified, and press in such a way the large veins of the abdomen and chest, especially the lower vena cava, the vena portæ, and the vena iliaca and hypogastrica, with all their branches. These pressures are generally combined with half-active movements of the lower limbs, or of the trunk.

Instances.—1. Opposite stride reclined standing, double knee flexion (P.R.), with stomach loin pressure.

2. Stretch squat standing, knee extension (G.R.), with stomach loin pressure.

3. Stretch standing, leg flexion (P.R.) and extension (G.R.), with back and stomach pressure.

4. Stretch fall sitting, trunk raising (G.R.), with chine abdomen pressure.

5. Shelter stride kneeling, back pulling (P.R.), with stomach loin pressure.

Let-off pressure.

This consists in a compression of the abdomen near the

diaphragm on four sides, in a slight raising and expanding of the trunk upwards, and in a sudden leaving off of the pressure. The patient is in a relaxed sitting position, with four gymnasts standing severally before, behind, and on each side. The pit of the stomach only is not pressed. The gymnasts place their hands in such a way round the body of the patient that two hands of different gymnasts always cover each other. The movement is commenced by a uniform pressing together, and a slight raising, or upwards pulling, of the patient's body by the hands of the gymnasts. When the pressure has lasted half a minute, all the gymnasts, at word of command, suddenly and simultaneously leave off, so that the body sinks at once into the original relaxed condition. The movement is repeated three or four times, with intervals of a few seconds.

Point pressure on the abdomen.

This consists in a pressing of the fingers, for five to ten minutes, on a point of the abdomen about an inch higher than the promontorium, a little to the right. If one gymnast has not the power to press so long, two or more change during the time. The patient is in half-lying position. This movement is also made with vibration.

CURTSEYING

(See fig. 35, page 29, and fig. 50, page 34)

Consists in an active or half-active leg flexion (from straight into curtsey position), followed by an active or half-active leg extension; when the *flexion P.R.* is done, the *leg extension G.R.* follows, or, when the first is done with G.R., the second is done with P.R.; or the one is active, while the other is done with resistance either of the patient or the gymnast. The movement, which is either done with one or both legs, is sometimes passive during the flexion and extension, or only during one of them. The patient is in standing, less frequently in lying or swim hanging position.

Instances.—1. Wing standing, double knee curtseying (flexion active, extension G.R.), with shoulder and loin pressure.

Two gymnasts, standing one on each side of the patient, place one hand on the shoulder, the other crossed on his loins, and resist while he raises himself by double knee extension; and at the same time they press the shoulders a little backwards and downwards.

2. Left span reclined standing, double knee curtseying (flexion active and extension G.R.), with pressure on the right side of the back and left side of the chest.

3. Speak grasp standing, curtseying (P.R.) and (G.R.)

A gymnast, standing behind the patient, presses on his shoulders, while the patient resists during the flexion; the extension (G.R.) follows.

4. Stride standing, curtseying (P.R.)

5. Lean half standing, curtseying (P.R.)

6. Reclined balance standing, curtseying (P.R.)

The patient, standing with one foot on the balancing post (see fig. 25, page 26), reclines strongly and stretches the hands forwards and downwards; they are seized by a gymnast standing before him on the floor, and pulls him slowly down, while the balance standing leg is curtseying; at the same time the gymnast assists the patient to keep his position.

7. Yard grasp standing, curtseying (P.R.)

8. Heave reclined standing, curtseying (P.R.)

9. Stretch yard grasp standing, curtseying (P.R.)

10. Span reclined kick standing, curtseying (P.R.), with pressure on the loin and instep.

11. Span reclined jump standing, curtseying (P.R.), with loin pressure.

12. Stretch reclined instep support standing, curtseying (P.R.), with double arm pressure.

13. Stretch heel supporting, curtseying (P.R.), with double arm pressure.

14. Stretch half lying upper and forearm flexion (G.R.), with curtseying (G.R.)

Four gymnasts resist, one on each limb.

15. Stretch half lying arm down pressure (P.R.), and curtseying (G.R.)

The stretched arms are bent by a gymnast while the

patient resists; at the same time the patient bends his legs, while the gymnast resists.

16. Swim hanging, curtseying (G.R.)

HOLDING

Is properly only a position in which the body of the patient is held by a considerable exertion of its own muscular force, no motion being perceptible. The patient remains immoveable in the various positions till he begins to tremble, from the difficulty of the position; that is, from a few seconds to half a minute, or longer. When the patient has been some time in the prescribed position, he is supported by the gymnast, or rests in a more comfortable position; after a short pause, the holding is repeated two or three times.

The most usual holdings are the following:—

Instances.—1. Wing fall toe opposite standing, holding.

One or two gymnasts support the patient only on the back part of his head, for a minute or longer.

2. Stretch fall, holding.

3. Yard fall, holding.

4. Half stretch sideways falling, holding.

Either the arm belonging to that side on which the falling is done, or the arm of the other side, remains stretched. The support is given only on the outer edge of one foot by a fixed object, and on the wrist of the stretched arm by the assistant.

5. Span reclining, holding.

6. Tumble standing, holding.

7. Wing fall sitting, holding.

8. Stretch fall sitting, holding.

9. Think fall sitting, holding.

10. Rest fall sitting, holding.

11. Shelter fall sitting, holding.

12. Half stretch fall sitting, holding, with arm pressure.

13. Wing fall long sitting, holding.

14. Stretch fall long stride sitting, holding.

15. Half yard fall long sitting, holding, with arm pressure.

16. Oblique sitting, holding.

17. Half yard oblique sitting, holding, with arm pressure.

18. Half stretch oblique sitting, holding, with arm pressure.
19. Yard span sideways falling, holding.
20. Reclined forwards leg lying, holding.
21. Reclined stride forwards leg lying, holding.
22. Twist forwards leg lying, holding.
23. Stretch reclined forwards leg lying, holding.
24. Half stretch twist forwards leg lying, holding.
25. Twist stride leg lying, holding.
26. Half stretch twist stride leg lying, holding.
27. Stem lying, holding.
28. Sideways stem lying, holding.
29. Star stem lying, holding.
30. Arch lying, holding.
31. Star arch lying, holding.
32. Rack heel support, holding.
33. Yard heel support, holding.

ROTATION

Is a movement in which some part of the body describes with its longitudinal axis the surface of an imaginary cone, the base of which is at the free end of the part moved, and the axis at the joint to which the movement extends.

Arm, hand, and finger rotation.

These movements are either passive or half active.

Arm rotation.

The whole arm, without any flexion at the elbow, wrist, or finger joints, is moved in a curve, so that the tips of the fingers describe a perfect circle, seldom more than one foot in diameter; but they (the arms) should remain always as nearly as possible in the commencing position. In stretch position, the rotation is generally done with both arms at the same time; in other positions, first with one and then with the other arm. Generally fifteen circles are made quickly one after the other, and the whole movement is repeated twice, with short intervals. A pulling is combined with the passive rotation, for which purpose the gymnast places one

hand on the thorax, immediately under the arm of the patient, and with the other hand he takes hold of the wrist of the arm which is to be moved; passive arm rotation may be done also while the patient's arm is bent, the elbow thus describes a circle.

Instances.—1. Speak span grasp standing, arm rotation (passive).

2. Span grasp yard standing, arm rotation (passive).

3. Span grasp stretch standing, arm rotation (passive).

4. Left rack stride sitting, left arm rotation (P.R.)

5. Stretch stride kneeling, double arm rotation, with pulling (passive).

The gymnast stands behind the patient.

6. Half stretch forwards leg lying, arm rotation (passive).

7. Rack leg lying, double arm rotation (passive), with pulling

8. Speak hanging, arm rotation (passive).

Hand rotation.

The hand, with the fingers, is kept straight, and moved round in a circle. (See *passive hand rotation*, page 65, fig. 91.)

Finger rotation.

This is done generally with single fingers, which are moved in a circle, and at the same time kept straight.

Leg rotation.

The rotation of both legs placed together, which affects principally the pelvis, is mentioned under the article *pelvis rotation*, and consists in a circular movement at the hip-joint of the entirely stretched leg. It may be either passive, combined with pulling, or half active.

Instances.—1. Lean kick standing, leg rotation (passive), with pulling.

2. Opposite swing standing, leg rotation (passive), with pulling.

3. Span reclined kick stride standing, leg rotation (passive), with pulling.

4. Trunk lying, leg rotation (P.R.) or (G.R.)

5. Stem lying, leg rotation (G.R.) or (P.R.)
6. Stem sideways lying, leg rotation (passive).
7. Roof stride hanging, leg rotation (passive).

Leg stride rotation.

(See *half lying passive stride rotation*, page 69, fig. 98.)

This passive movement is invariably done with one leg only, which is bent at the knee until it forms a right angle, and then is moved at the hip-joint, while the relative position of the other part of the leg remains the same. The gymnast takes hold with one hand of the foot, with the other of the knee, and moves the leg in a circle at the hip-joint, so that the kneepan describes a perfect circle, and the anterior surface of the thigh, in its course, almost touches the stomach of the patient, or actually strikes against it.

The rotation is done six to eight times consecutively with the same leg; then, after a short pause, it is repeated two or three times. The movement is changed by turning the leg first from right to left, and then in the opposite direction. When the movement is done with one leg, it is then done with the other, generally beginning with the right. Sometimes pulling (P.R.) follows the passive rotation; the patient resists at the hip-joint, with the leg bent at the knee, and almost touching the abdomen. This pulling is repeated three times.

Instances.—1. Span reclined standing, stride rotation (passive).

2. Half lying, stride rotation and leg extension (P.R.)
3. Trunk lying, stride rotation (passive).

Foot rotation.

(See *half lying double foot rotation*, page 66, fig. 93.)

This is done, in half-lying position, twelve times successively and briskly on one side, and then as often on the other, while the foot is pulled rather towards the leg than from it. The foot rolling is done passively, and combined with either

a passive or a duplicated foot flexion and extension. (See pages 67, 68, figs. 94, 95, 96, 97.)

Head rotation

Is a passive circular movement of the head and throat, so that the top of the head forms a regular circle. The patient is, during the head rotation, perfectly passive ; and if he finds it too difficult, which is frequently the case in the beginning of the treatment, a *head half rotation* only is made, in which the gymnast turns the head a little backwards in a half circle to and fro, and then in a similar way forwards, or first on one side and then on the other. The head half rotation is done ten to fifteen times quickly, one after the other, and then twice repeated, at intervals of a few seconds. As the head rotation is in itself a very efficacious movement, it is not combined with other movements.

Instances.—1. Free standing, head rotation.

The patient is assisted on the shoulders, and, if needed, on the hips also. The gymnasts stand on an elevation behind and sideways of the patient, whom they fix with one of their hands placed on his shoulder, they place their other hands, covering each other, on the top of the head, or, according to the different positions of the patient, more forwards or backwards on the head ; they press slightly, and rotate the head six to nine times on one side, and as often to the other side. A forwards flexion (P.R.), and a backwards flexion (G.R.) of the head, is done two or three times after the head rotation.

2. Fall chine lean stride standing, head rotation.
3. Inclined thigh lean standing, head rotation.
4. Deep crooked standing, head rotation.
5. Stride sitting, head rotation.
6. Long fall sitting, head rotation.
7. Stride fall sitting, head half rotation backwards.
8. Forwards leg lying, head rotation.
9. Inclined forwards leg lying, head rotation.
10. Swim hanging, head rotation.
11. Fall right twist stride sitting, head half rotation.
12. Stem lying, head rotation.

Trunk rotation

Is a passive or half-active movement round the pelvis as a fixed point, described by the head and shoulders. The legs and the pelvis of the patient are fixed, the head and the shoulders are moved in a circle by two gymnasts, who stand one on each side of the patient and take hold of his shoulders; the rotation is made six times to one side and as often to the other, then three times to the first and three times to the other side; a pulling of the whole trunk upwards and backwards by a gymnast, who stands behind the passive patient, and takes hold of him at the armpits, follows the trunk rotation. The movement may be performed as a half rotation forwards or backwards, or on one side. Different arm positions, as well as other movements, and especially pressures, may be combined with it.

Instances.—1. Bound standing, trunk rotation (passive).

2. High stride sitting, left half rotation (passive), with pulling.

3. Half stride sitting, trunk rotation (G.R.), with stomach and loin pressure.

4 Leg forwards lying, trunk rotation (P.R.) or (G.R.), with chine and abdomen pressure.

Pelvis or hip rotation.

(See *trunk lying, hip rotation*, page 75.)

The trunk of the patient, in trunk lying position, is fixed at the shoulders by a gymnast, who stands near the head of the patient; the legs are placed near each other, and are moved with the pelvis in a circle, so that the heels describe a perfect circle. The pelvis rotation is generally done passively, and also as a half rotation round the upper part of the spine, which is fixed.

Instances.—1. Twist trunk lying, hip rotation (passive).

2. Oblique trunk lying, pelvis rotation (passive).

3. Stretch trunk lying, hip rotation (P.R.)

WALKING.

The patient makes the movements of walking on the same spot, while one or two gymnasts, with their hands placed on the shoulders or hips, press his body downwards; thus the movement is half active, with G.R.

Instances.—1. Heave standing, walking (G.R.), with stomach and loin pressure.

2. Yard standing, walking (G.R.), with stomach and loin pressure.

3. Stretch standing, walking (G.R.), with arm pressure.

4. Left stretch standing, walking (G.R.), with left arm pressure.

5. Span standing, walking (G.R.), with stomach and loin pressure.

6. Half span standing, walking (G.R.), with shoulder pressure.

7. Span speak grasp standing, walking (G.R.), with shoulder pressure.

8. Right span standing, right walking (G.R.), with shoulder pressure.

In this position the movement of walking is done with the right leg only.

SPANNING

Is a movement similar to *pulling* (see *passive trunk pulling*, page 146), from which it differs only in the parts operated on being pulled in two opposite directions.

Instep spanning is an extension of the joints of the foot by the gymnast, while the patient resists. (See *foot extension* (P.R.), page 77.)

Calf spanning

Is an extension of the leg, while the patient resists. (See *flexion and extension of the leg* in the knee-joints only, page 108.)

Chest spanning

Is a passive expansion of the anterior and upper part of the thorax, by which the shoulders are placed very much back-

wards, and the chest forwards. The gymnast pulls at both shoulders, if the patient is in wing position; but in yard or stretch position, he pulls at the wrists. When one shoulder is fixed by the position, as, for instance, in half span grasp standing position, then the chest spanning is done only with the other shoulder, which is pulled backwards; if the patient is in half-stretch position, then the movement is done with one arm only.

Instances.—1. Speak grasp standing, chest spanning.

One gymnast, standing behind the patient, places his hands on the shoulder-blades, and pushes the thorax slowly forwards; the hands and feet of the patient are not moved from their place, though he may be raised passively on the toes.

2. Yard grasp standing, chest spanning.

3. Heave standing, chest spanning.

4. Span standing, chest spanning.

5. Span grasp stretch standing, chest spanning.

A gymnast, standing behind and a little higher than the patient, places one hand on the shoulder of the arm, which is in span position, and takes hold, with the other hand, of the wrist of the stretched arm, and brings it, while pulling, in a circle from forwards outwards, and finally backwards; the circle is so small, that the arm may remain constantly in stretch position, and not around any other.

6. Span yard standing, chest spanning.

7. Span speak standing, chest spanning.

8. Half stretch standing, chest spanning.

9. Wing yard standing, chest spanning.

In this movement, as well as in Nos. 8 and 10, weak patients are assisted on the hips by a gymnast, who stands before them. The gymnast executing the movement stands sideways, and places one hand on the wrist, and the other on the shoulder of the arm in yard position.

10. Half speak standing, chest spanning.

11. Stretch sitting, chest spanning, with knee back pressure.

The legs of the patient, sitting on the flap, are fixed by one gymnast, while a second, standing behind him on the seat,

takes hold of his arms, which he moves at the same time, from forwards and inwards, outwards and then in a curve backwards. The circle is so small, that the arms are always nearly in stretch position, and almost touch each other when forwards or backwards. The gymnast presses at the same time one of his knees against the back of the patient. The gymnast should turn his knee a little sideways, so as not to cause pain to the patient.

12. Half stretch sitting, chest spanning.

13. Stretch stem lying, chest spanning.

One arm of the patient, kept in stretch position, hovering free in the air, is moved by a gymnast, standing sideways, in a small circle from below and inwards, outwards and then upwards, and at the same time pulled towards the head. Weak patients are supported on the abdomen.

14. Stretch high leg forwards lying, chest spanning.

Two gymnasts, standing one on each side of the patient, take hold of his wrists, and move the arms from inwards and below, outwards and then upwards in a small circle, at the same time pulling them towards the head. The two second hands of the two gymnasts executing the movement are placed on the shoulder-blade of the patient, or covering each other, on his loins, where they make a slight pressure.

ANGLE MOVEMENT

Is a passive trunk flexion, in which the trunk forms an acute angle with the thighs.

The angle movement of the trunk.

The trunk is bent in the region of the navel, so that the shoulders and the thorax approach the pelvis and the hips as much as possible. The patient is generally in half lying curtsey position on the flap, to which a little stool is added, for the feet and legs to rest on. The patient is placed with his seat on the hinges, and the rest of the body on the moveable part of the flap.

One gymnast fixes the feet, two other gymnasts, standing one on each side, and rather behind the patient, fix each with

one hand his shoulders, and with the other hand take hold of the moveable part of the chair, which they raise, and move slowly towards the feet of the patient, till it forms an acute angle with the rest of the chair; thus the patient is brought into a doubled-up position. In this position the patient remains for several seconds, and then he is brought either into the half lying or lying position, by the gymnast placing the flap horizontally.

After a rest of a few seconds, the movement is repeated six or eight times, and differs from the majority of passive movements in being done very slowly.

Instances.—1. Curtsey half lying, trunk angle movement.

2. Curtsey lying, trunk angle movement.

3. Curtsey lying, trunk angle movement, with stomach pressure.

4. Stretch curtsey lying, trunk angle movement.

The stretched arms and the forehead of the patient are fixed.

5. Half lying, trunk angle movement, with leg curtseying (G.R.)

6. Stretch curtsey lying, trunk angle movement, with double upper and forearm flexion (G.R.)

Three gymnasts stand near the head of the patient; the one who stands in the middle makes the movement; those on each side resist with their hands the flexion of the stretched arms, and bend themselves at the same time, during the angle movement, in a curve forwards.

7. Right oblique curtsey lying, trunk angular movement, with right abdominal pressure.

Angle movement of the pelvis.

The trunk is passively bent, as in an angle movement of the trunk; but there is this difference—that the head and thorax remain fixed, while the abdomen is bent up by moving the pelvis towards the thorax, so that the os pubis, or, at least, the anterior side of the thighs, almost touch the sternum. This movement is only executed in lying position. The patient's legs are placed and fixed on the moveable part of

the flap, the seat is on the hinges, and the trunk on the immoveable part of the chair, and when this is not long enough to support the trunk and the head, a second flap or chair is used. One gymnast, sitting near the head of the patient, fixes his shoulders, and prevents the trunk from sliding during the movement. Two other gymnasts raise the flap, and bend it as much as possible; thus the anterior surface of the legs and the pelvis approach the thorax. The patient remains for a few seconds in the greatest flexion; then the flap, with the legs and feet fixed to it by the gymnast, is moved back. This movement must be done slowly, and may be repeated six to eight times.

LIFTING.

One part of the body is raised (lifted) from another, on which it naturally presses, or from the floor, so that it is kept almost hovering in the air.

Lifting of the head, or of the lower jaw and neck.

The head is raised and slightly pulled upwards, and this movement is combined with head guiding. The execution of the movement is similar to *head guiding*, Instance 1, page 148.

Lifting of the chest, or chest lifting.

The thorax is pulled upwards or lifted by a gymnast, who places his hands in the armpits, or on the stretched arms of the patient. The pulling up is only done so far, that the trunk is elongated a few inches, and the spine stretched as straight as possible. After several seconds, the gymnast permits the thorax to sink down, and then the movement is repeated six to eight times, while the patient remains perfectly passive during the whole movement.

Instances.—1. Stride chine lean rest standing, chest lifting.

The gymnast who executes the movement stands behind the patient, on an elevation.

2. Stride sitting, chest lifting.

The legs of the patient are fixed by a gymnast standing

before him, a second standing behind him on the seat makes the movement.

3. Stride stretch sitting, chest lifting, with stomach loin pressure.

The gymnast takes hold of the wrist of the stretched arms.

4. Stride kneeling, chest lifting.

The hips are fixed by one or two gymnasts, while a third lifts the body.

5. Walk standing, chest lifting.

6. Stride twist sitting, chest lifting.

7. Stride oblique sitting, chest lifting.

Loin lifting.

A gymnast stands sideways near the patient, in lying or half-lying position, and bends over him; he places his hands on the loins, and raises them from the couch on which the patient lies, in such a way that the trunk forms a convex line, the highest point of which is the pit of the stomach; while the head, shoulders, thighs, and part of the seat remain on the couch.

Instances.—1. Half lying, loin lifting.

2. Half lying, loin lifting, with loin stroking.

3. Lying, loin lifting, with stroking and vibration. (See *half lying, loin lift stroking,* page 74, and the chapters on *stroking and vibration.*)

Hip lifting.

This movement is done, with resistance of the gymnast, in standing, half kneeling, hanging, and rocking positions.

Instances.—1. High opposite standing, hip lifting (G.R.)

The patient stands with one leg on an elevation, while the other is raised upwards, without any, or with only a slight flexion, at the hip, knee, and foot joints, so that the sole is raised a little from the horizontal level. The trunk remains as straight as possible, while the gymnast resists by placing his hands on the ankle-joint of the leg which is to be lifted. The movement is done in standing, half kneeling, hanging, and rocking positions. The leg is raised almost vertically;

there is an actual raising of the hip visible, by which the leg or hip lifting differs from the *leg raising*, in standing position. (See page 126.)

2. Half kneeling, hip lifting (G.R.)
3. Roof hanging, hip lifting (G.R.)
4. Forwards rocking, hip lifting (G.R.)

OVERTURNING

Is a passive *holding* of the patient, in tumble hanging position, into which he is placed, and in which he is kept a few seconds to half a minute, by two gymnasts, whose hands are placed as in fig. 81, page 50; after a pause, during which the patient is set down, and allowed to stand or sit, the movement is repeated three to six times.

BALANCING

Is similar to reclined balance standing, curtseying (P.R.) (See page 187.)

The patient stands with one foot on the balancing post (fig. 25, page 26), while the other foot hangs down freely, and the body is kept as straight as possible. Two gymnasts stand before the patient, one on each side; they take hold of his hands and, while he resists, pull him downwards, so that he slowly bends the hip, knee, and ankle joints of the standing leg. When the flexion is at its highest, the patient begins to extend the leg, while the gymnast resists. This movement is repeated three times with one leg, and then as often with the other.

SWINGING

Is a passive movement, consisting in pendulum motions of the arms and legs to and fro, and in flexions of the trunk forwards and backwards, downwards and upwards, and from one side to the other.

Swinging of the arms.

The arms are swung passively, either singly or both at once, parallel to the lateral surface of the trunk, like a pen-

dulum, forwards and backwards. The assistants continue the movement by slightly pulling, and by pushing the arms forwards and backwards. After fifteen to twenty swings, a pause is allowed for a few seconds, and then the movement is repeated twice, with a similar interval.

Instances.—1. Leg opposite crooked standing, double arms forwards and backwards swinging.

2. High stride fall sitting, arm forwards and backwards swinging.

3. Inclined stride kneeling, arm forwards and backwards swinging.

4. Half hanging, arm forwards and backwards swinging.

Swinging of the legs.

This movement is similar to the swinging of the arms, the legs being passively swung to and fro.

Instances.—1. Half standing, leg swinging.

2. Half kneeling, leg swinging.

3. Hanging, leg swinging.

4. Forwards rocking, leg swinging.

Swinging of the trunk forwards and backwards, upwards and downwards.

The body of the patient, in wing position, is moved backwards and forwards by two gymnasts, who place their hands on his shoulders and move him, from ten to fifteen times, quickly forwards and backwards, while the feet and legs, or sometimes also the thighs, are fixed, either by other gymnasts or by the patient being in stride sitting position; the assistants then hold, with both hands, the shoulders and armpit of the patient, or, with one hand, the anterior side of the shoulders, and, with the other, the shoulder-blade. At the commencement, the curves through which the body swings are smaller, they increase with each swing, and the motion becomes gradually quicker; towards the end, the movement gradually decreases in extent and velocity. After fifteen swings there is a pause for a few seconds, and then the movement is repeated twice, with a similar interval. In the

lying position, the movement is an upwards and downwards swinging.

Instances.—1. Stretch thigh opposite standing, forwards and backwards swinging.

2. Think deep crooked standing, forwards and backwards swinging.

3. Stride kneeling, forwards and backwards swinging.

4. Stride sitting, forwards and backwards swinging.

5. Long sitting, forwards and backwards swinging.

6. Leg lying, upwards and downwards swinging, with stomach and loin pressure.

7. Forwards leg lying, upwards and downwards swinging.

Sideways swinging of the trunk.

This movement is done similarly to the forwards and backwards swinging, but sideways.

FLYING

Is similar to a passive arm rotation, from which it differs, inasmuch as that the shoulder-blades participate at the same time in the movement of both arms, in stretch position. One gymnast, standing behind the patient, takes hold of the wrists of the passively stretched arms, which he presses first down and forwards, so that the upper and forearms are very much bent towards each other; the elbows are thus moved in a circle, forwards and then downwards, but still a few inches distant from the side of the trunk, and afterwards backwards and upwards. During the latter part of the circle, the upper and forearms are, by degrees, more stretched, though not perfectly so; then the passive downward motion and flexion begin once more, followed by the backward and upward motion, with passive upper and forearm extension: this is done eight to ten times. After a pause, the same movement, with the arms bent in a backward direction, is executed from eight to ten times. The movement may be done with one arm at a time; the shoulder-blade participates in the flying, for when it is done backwards, the

shoulder-blade moves forwards, and when done forwards, it moves backwards.

Instances.—1. Stretch sitting, flying.
2. Stretch standing, flying.
3. Stretch kneeling, flying.
4. Stretch half lying, flying.
5. Stretch lying, flying.

PUMPING

Is a passive movement, and similar to an alternate passive arm flexion and passive arm extension, in which generally both arms—the upper and forearms being passively bent towards each other—are pulled upwards on both sides of the body, and again passively pushed and stretched down, so that at one moment the arms are stretched near the head, and then again bent on both sides of the body. The movement is done ten or twelve times successively, and, after a short pause, repeated two or three times. The pumping may be done with one arm alone.

Instances.—1. Stride standing, pumping.
2. Lying, pumping.
3. Right walk kneeling, pumping.

STROKING

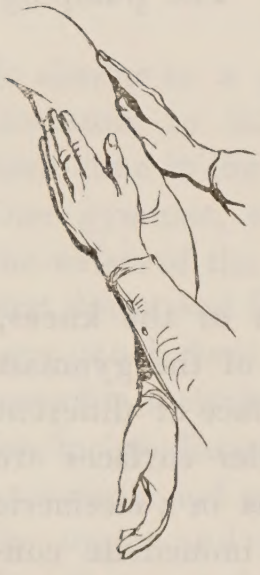
Is a passive movement, done by the hands or the knees, or with instruments. The hand or hands of the gymnast are moved near, or in contact with, the surface of different parts of the patient, so that larger or smaller surfaces are either fanned by the hand of the gymnast, as in a mesmeric pass (*near stroking*), or are in mediate or immediate contact with it (*contact stroking*), according as the parts are or are not covered with clothing. There are two kinds of *contact stroking*—the slighter and the stronger. In the slight contact stroking, the hand of the gymnast is moved, without any particular pressure, over the patient's uncovered skin; while in the strong contact stroking, or strong stroking, a firmer and more violent pressure, by the hand of the gymnast, is made on the covered skin and on the hairy parts of

the head. The stroking is done either in or against the direction of the hair: in the first, the gymnast, with the palms of his hands, presses the hair smoothly on the skin, from the crown of the head, in all directions downwards; while in the stroking against the hair, the tops of the slightly bent and spread fingers are pressed *against* the direction of the hair, as, for instance, on the head, from all sides, upwards towards the crown.

On other parts, the *strong stroking* is done either in the direction of the valves of the veins or in an opposite direction. Stroking may be combined with other passive movements, as chopping, vibration, pressure, etc., or with half-active movements. The stroking movements are done quickly, and repeated after a short pause.

Stroking on the arms and legs,

Against the valves of the veins, is done on the extremities, in a longitudinal direction from the trunk towards the fingers and toes; the fingers of the gymnast are either flat or slightly bent, and partly grasp and surround the limb. The stroking in the direction from the fingers and toes to the trunk is stroking *with* the valves. The movement is done with tolerable force; the stroking hands of the gymnast uniformly surround the arms (see *longitudinal arm stroking*, page 74) or legs, with the fingers directed upwards, and stroke downwards, pressing, as it passes, on each prominent part as much as possible.



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Stroking on the head and throat.

The stroking from the crown of the head to the chest, shoulders, and back is in the direction of the valves, and in the opposite direction, against the valves.

The strokings most used are those *down* the head and *up* the head; on the anterior, posterior, or one of the lateral surfaces;

longitudinal strokings down from the head, throat, shoulders, arms, and head, to the fingers; stroking in the direction of the sinus longitudinalis and transversus. During all these movements the patient may be in stride sitting, stride fall sitting, leg lying, leg forwards lying, swim hanging, span lying, or stem lying positions.

Head upwards longitudinal stroking.

Both hands, the fingers of which are a little spread and directed upwards, are placed one on the neck, the other on the forehead, and moved simultaneously upwards, to the crown of the head. This movement is rapidly repeated five or six times, and generally combined with chopping of the head; after which the stroking is repeated, followed by a chopping, and so a third time.

Head stroking in the direction of the longitudinal sinus and transversal sinus.

The gymnast, standing before the stride sitting patient, places two fingers—the thumbs in preference—on the root of the nose, and strokes tolerably strong, pressing in the direction of the frontal and sagittal sutures, as far as the external occipital protuberance; the other fingers are slightly bent. The gymnast must not cause any pain to the patient by pulling his hair; and when reaching the protuberance, he separates his thumbs, carries one to the right and the other to the left ear, in the direction of the transversal sinus, and about one inch beyond the mastoid process, down the sterno-cleido mastoideus muscle of each side. The movement is done three times, with short intervals.

Linear back stroking.

Two gymnasts, behind the patient in opposite inclined standing, or in inclined sitting position, fix each of them, with one hand, his shoulders, while the other hands alternately stroke very strongly down the middle of the back, from the neck to the chine-bone. The movement is repeated ten to

twelve times, and is combined, in the inclined sitting position, with an active trunk or back raising, executed so slowly by the patient, that the stroking may be done three or four times before the trunk comes from the inclined into the straight sitting position. Sometimes the linear back stroking may be combined with other passive movements of the back; as, for instance, longitudinal back chopping. (See chapter on *chopping*.)

Chine stroking.

The patient is in opposite inclined reclined standing position. The gymnast places one hand after the other transversely on the lumbar vertebræ, and then, pressing very strongly, strokes down rapidly on the posterior surface of the chine-bone, so that the patient comes still more into the inclined reclined position, and the abdomen especially protrudes still more forwards and downwards. After ten or twelve similar strokings, a short pause is made. The movement is repeated two or three times.

Knee chine stroking, with double upper and forearm flexion (G.R.)

The gymnast strokes not with his hand, but with his knee, pressing slowly and firmly on the middle of the back of the patient, from the shoulder-blade to the chine-bone; the movement is repeated three times. The legs of the patient, who is either in stretch stride sitting, or in stretch stride kneeling position, are fixed by one or two gymnasts standing before him (in the kneeling position, they stand sideways and behind him); the third, behind the patient on the seat, takes hold of the stretched arms, and at the same time bends one of his knees, so that it projects, and may be pressed on the back of the patient, who, while making a double upper and forearm flexion (G.R.), pulls down the standing gymnast, whose knee slides down the back to the chine.

Loin lift stroking.

(See *half-lying loin lift stroking*, page 74.)

Stomach or abdomen stroking

Is either an alternate, concentric, or serpentine stroking.

Alternate abdomen stroking.

The gymnast, standing before the patient in half-lying position, moves his hands alternately, from the linea alba, in a straight direction outwards, which action is repeated ten to twelve times along the whole linea alba. The whole movement is repeated three to four times.

Chest arch stroking

Is done as an alternate stroking, but is directed from the middle of the chest upwards to the shoulders; the arch stroking may be done also simultaneously with both hands.

Concentric abdomen stroking.

The gymnast, standing before the patient in span position, places one of his hands (with the ulnar edge if he wishes to act deep, or with the palm of the hand when the effect is to be superficial), and moves it in larger or smaller circular lines over the whole surface of the abdomen, and repeats this from twenty to thirty times, with small pauses.

Double circular or concentric abdomen stroking.

The hands of the gymnast are placed on the hypochondria, with the fingers directed outwards; each hand makes a circular stroking movement; the two circles meet on the linea alba. Six or eight small circular movements, descending downwards, are done on the abdomen; and, after a short pause, the movement is several times repeated. (See note, page 85, and fig. 116, which shows how the hands of the gymnast, standing before the patient, are placed during the double circular abdomen stroking.)

Serpentine (or spiral) abdomen stroking.

The gymnast stands before the patient in span standing or span reclined sitting position, places his hand on the hypochondria in such a way that the wrist-joints almost touch each other in the pit of the stomach, while the

fingers are directed outwards. He then makes the stroking with the flat hands in serpentine lines strongly outwards, and then inwards until, after eight to ten such zigzag lines, he touches the groins. This stroking is repeated three or four times, and commonly combined with

Colon stroking,

In which the hands are placed parallel to each other, with their ulnar edge against the anterior surface of the hip-bone, and pressed deep into the abdomen; one hand passes upwards near the edge of the right hip-bone, and then across the abdomen, while the other hand simultaneously descends from near the left hip-bone to the os pubis.

The movement is also done with one hand, which is moved on the colon ascendens, transversum, and descendens, from the right groin up to the edge of the hip-bone, then above the navel transversely on the abdomen, and near the edge of the left hip-bone down to the left groin.

The colon stroking is repeated three times.

Instances of abdomen stroking.—1. Span standing, concentric abdomen stroking.

2. Span reclined standing, abdomen stroking.

3. Stretch reclined chine lean stride standing, serpentine abdominal stroking, with double arm pressure.

4. Stretch reclined lying, concentric abdominal stroking.

The hands and feet of the patient are stretched and pulled by gymnasts, while the patient strains his abdominal muscles as much as possible, and protrudes the abdomen during the movement.

5. Stretch fall long sitting, concentric abdominal stroking.

6. Rest fall stride kneeling, serpentine abdominal stroking, with double elbow pressure.

Two gymnasts fix the legs. A third gymnast, standing behind the patient, presses on both his elbows, so that he is still more in fall position, but supports him also, and pulls him slightly upwards; while a fourth gymnast makes the movement.

7. Arch lying, concentric abdominal stroking.

8. Reclined leg lying, concentric abdominal stroking.

9. Speak grasp inclined chine lean standing, alternate abdominal stroking.

10. Speak grasp crooked thigh opposite standing, concentric abdominal stroking.

11. Squat half lying, alternate abdominal stroking.

12. Squat lying, colon stroking.

13. Crooked stride kneeling, alternate abdominal stroking.

14. Sideways lying, half alternate abdominal stroking.

Groin stroking

Is made from the groins to the inner part of the thighs, and repeated during three to five minutes.

Strokings on larger surfaces

Are generally made in slow motions, six or eight times repeated. It is also necessary that the hand of the gymnast should touch the surface of the patient with the whole palm as equally as possible.

Stroking on the whole body

Is generally done in the yard grasp standing position. One gymnast stands before, one behind him, and one on each side of the patient, dressed in very light clothing. The first makes the stroking on the anterior side of the body, beginning from the throat and shoulders; the second on the posterior side, beginning from the neck and shoulders; the third and fourth down both arms, beginning, as near as possible, at the armpits; the two last gymnasts move at a much slower rate, in order to finish at the same time as the others. Each gymnast uses both hands simultaneously. The movement is generally done six times, one after the other, and for each stroking ten to fifteen seconds are required, so that in one or two minutes the whole movement is finished. Six gymnasts may be engaged in this movement, in which case two stand in front, and two on the posterior side, one of them makes the stroking as far as the hips, and the other from the hips to the feet and toes; the fifth and sixth make the stroking on the arms.

Stroking with round wooden sticks

Is made after the pressure on the sciatic nerves. (See page 179.) The gymnast places the wooden sticks transversely on the patient's thigh, near the seat, and strokes quickly and strongly downwards the whole length of the leg to the heel, and repeats the movement three to six times.

Stroking with billiard balls.

The gymnast, holding the ball in the palm of the hand, so that one half projects, presses it in concentric circles on the uncovered abdomen of the patient six to twelve times; the stroking is then repeated three to four times, with the necessary intervals.

FRICTION

Is a kind of stroking movement on smaller surfaces of the body, made alternately up and down, or to and from, while the gymnastic stroking is generally done on larger surfaces, and in one direction. The friction, or the stroking in alternate directions on smaller surfaces, is rarely used in the treatment by scientific gymnasts.

SAWING.

The hand of the gymnast is moved like a saw, while pressing with the ulnar edge more or less deep, and at the same time progressing slowly sideways over the whole extent of the part to be acted upon, and the skin of which should be rather relaxed than tense. Sometimes, instead of the ulnar edge of the hand, only the fingers, placed together, are used. The sawings are generally repeated several times, with short intervals.

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Sawing of the muscles of the arms and legs

Are usually done across the muscles of the arms and legs. The several sawing motions are made very near each other, and the whole movement, consisting of fifteen to twenty

sawings, should not extend over too large a surface; it is generally repeated three times, with intervals.

Thigh sawing,

Combined with stroking, is done on the inner surface of the thigh, with the tips of the bent fingers placed together, and moved in a sawing manner across the thigh, in the direction of the sartorius muscle.

Leg sawing

Is illustrated by fig. 148; the dotted lines show the direction of the to and fro movement.

Sawing of the head.

On the hairy part, the sawing hand is moved transversely from one side of the head to the other, and from the forehead to the back part. The movement is less frequently done on the face.

Instances.—1. Half lying, head sawing, with leg curtseying (G.R.)

2. Long fall half yard sitting, head sawing.

3. Deep crooked standing, sawing of the crown and back part of the head.

Sawing of the neck.

This is done partly on the head and partly on the upper part of the trunk, especially of the back. The edge of the gymnast's hand is moved to and fro on the same spot ten to twelve times.

Instances.—1. Inclined stride sitting, neck sawing.

2. Fall stride kneeling, neck sawing.

3. Forwards reclined leg lying, neck sawing.

4. Stem lying, neck sawing.

5. Star stem lying, neck sawing.

6. Crooked thigh opposite stride standing, neck sawing.

Chest and back sawing

On the anterior side of the female thorax; the sawing is not made on the mammæ, but rather on the sides and back.

Interstitial neck sawing is made from backwards and upwards, forwards and downwards, in the interstices of the ribs, and is also called *concentric* chest sawing.

Instances.—1. Span standing, interstitial chest sawing.

2. Span speak grasp standing, interstitial chest sawing.

3. Span left oblique, right interstitial chest sawing.

This is done only on the right side.

4. Opposite inclined standing, left shoulder-blade muscular sawing.

The sawing is done on the muscles of the left shoulder-blade.

5. Half stretch oblique stride sitting, interstitial chest sawing.

6. Span inclined standing, linear back longitudinal sawing.

On both sides of the spine, the sawing is done down its whole length, so that the long muscles of the back are principally affected.

7. Half stretch twist leg lying, interstitial chest sawing.

8. Forwards leg lying, transversal back longitudinal sawing.

Each to and fro motion is made transversely on the spine, but the whole sawing movement is executed along its whole length.

FULLING.

This passive movement is executed in different ways, according as it is performed on the muscles, the skin, or the internal organs of the abdomen.

Muscular fulling

(See *half lying fulling of the arms*, page 73, and figs. 106 and 107),

Is made on the muscles of the extremities, and more frequently of the upper arms and thighs. The gymnast places the palms of both hands on the opposite sides of the limb which he presses, he then slides one hand forwards, and the other backwards, and so on, the hands all the while slowly

proceeding downwards along the limb. After a pause of several seconds, the fulling is repeated two or three times.

Skin fulling.

The gymnast takes hold, with the fingers of both hands, of a large wrinkle of the patient's skin, and moves the hands to and fro, so that one-half of the wrinkle is moved on one side, and the other half, simultaneously, in an opposite direction. This fulling is repeated twenty to thirty times, and may be done on most parts of the body. After a short pause, the movement is repeated two or three times, but it is used principally where the skin is thick.

Stomach and abdominal fulling

Is done by an alternate movement of both hands, placed transversely, so that the tips of the fingers are directed towards one side of the body, and the wrists to the other. The ulnar edge of one is pressed on the abdomen, and that of the other is raised. The movement done on the same place is called *point fulling*, and when done from the left to the right on the stomach, it is called *transverse stomach fulling*. In the *concentric* fulling, the hands are moved in concentric circles over the whole abdomen.

Transverse and point fulling is done six to eight times, concentric fulling ten to twenty times, and after a pause of several seconds. The movement is repeated two or three times.

Instances.—1. Squat half lying, stomach point fulling.

2. Squat lying, abdomen concentric fulling.

3. Stem lying, transverse stomach fulling.

4. Crooked standing, concentric abdomen fulling.

5. Inclined sitting, stomach point fulling.

KNEADING

Is a passive movement made by the fingers of the gymnast, and used principally on the abdomen and on thick muscular layers.

Peristaltic kneading of the abdomen.

The gymnast stands on a small elevation behind the pa-

tient, who is in crooked standing position, and his arms are thrown over the shoulders of the patient, so that he can reach the abdomen of the patient against whose back he partially leans. The fingers of both his hands are slightly bent, and the tips of the four longer fingers, as near as possible in a straight line, are placed on the middle of the pit of the stomach ; the tips of the fingers, which are not removed too much from the body, take hold of small particles of the soft parts of the abdomen, or of some of the abdominal organs, which are acted upon as dough during kneading ; the fingers are moved with a vermicular kind of motion, up and down, and at the same time sideways, so that the fingers crawl, as it were, over the abdomen outwards towards the side of the patient, and then inwards and downwards to the mid-line of the abdomen. Six or eight such concentric lines from the linea alba are sufficient to come down to the os pubis. The whole movement is repeated several times.

Transversal peristaltic stomach or abdomen kneading

Is done with one hand only, which is moved in transversal lines from one side of the stomach or abdomen to the other.

Muscle kneading.

The gymnast makes on the muscles of the patient similar movements to those described in abdomen kneading.

Kneading of the supinator magnus.

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The engraving illustrates the position of the gymnast's left hand kneading the supinator of the patient's left arm, which is passive, and supported by the right hand of the gymnast. The tips of the four longer fingers of the gymnast are placed in a straight line, and with the thumb move the muscle to and fro in its whole length, as the hand during the kneading action descends along the arm.

Kneading of the pectoral muscles, with arm rotation.

The gymnast stands on an elevation behind the patient, in sitting or standing position, and makes with his left hands an arm rotation on the patient's left arm, which he slightly pulls with his right hand; he kneads the left pectoral muscles, which he grasps and pulls to and fro; the position of his hand is similar to that in the kneading of the muscles of the forearm. This kneading is repeated until the muscle has been thoroughly kneaded or fulled. It is understood that the gymnast engaged in the execution of the movement on the right pectoral muscle uses his hands in a reversed manner.

VIBRATION

Is a passive movement, in which the tips of the gymnast's fingers, or his hand, or both his hands simultaneously, are brought into a state of vibration, and by placing these vibrating parts on different parts of the patient, these participate in the vibratory movement.

Point vibrations are generally done on a small place, by placing one finger on the part to be acted upon.

Arm vibration.

The gymnast takes hold with both hands of the patient's passive arm at the metacarpus. Fig. 150 illustrates the position of the gymnast's hands while vibrating the patient's right arm; the vibration is done for thirty to forty seconds, and several times repeated.

(150.)

Leg vibration

Is made in a similar way. The gymnast takes hold of the patient's passive lower extremity at the metatarsus.

Head vibration

Is generally combined with *passive alternate head turning.* The gymnast stands on one side of the patient, by placing

one hand on the forehead, and the other on the back part of the head, and turns it first to one and then to the other side, and at the same time vibrates it. The vibration is done for some seconds, and, after a pause, repeated two or three times.

Instances.—1. Crooked standing, head vibration.
2. Deep crooked standing, head vibration.
3 Stride sitting, head vibration.
4. Stride inclined sitting, head vibration.

Nose vibration.

The gymnast makes the vibration with the fingers of one hand placed on both sides of the root of the nose of the patient, whose head is thus brought into a vibratory state; after the vibration, which lasts for some seconds, a stroking or a chopping follows. (See chapter on *chopping.*) The stroking is done from the forehead, on the nose, and part of the cheeks downwards, and is repeated several times. Sometimes the vibration and chopping precede the strokings, and the whole movement is repeated, with short pauses, two or three times.

Eye vibration

Is a point vibration, generally executed with one finger, the tip of which the gymnast places on the internal corner of the eye, by which the eye, with its adjacent parts, is shaken. Generally a stroking follows the movement.

Lower jaw vibration.

The patient is generally in crooked thigh opposite standing position. The gymnast puts a piece of folded linen on the tongue of the patient, who opens his mouth, with the lower jaw hanging down quite passively, which is moved by both thumbs of the gymnast placed on the covered tongue, and the other fingers below the chin. The vibration may be done also, with one hand only. The vibration is combined with *raising of the lower jaw* (G.R.), which is executed by the gymnast, resisting with his fingers on the lower jaw, while it

is slowly raised by the patient, who brings the jaws together, without completely shutting the mouth, in order not to injure the fingers of the gymnast.

Windpipe and larynx vibration.

The gymnast, standing sideways of the patient, who is in half lying position, makes the vibration with the slightly bent four fingers placed on one side, and the thumb on the other side of the larynx or windpipe; stroking on both sides of the throat, from the chin to the chest, generally follows, and chopping is also made sometimes after the vibration.

Chest vibration.

The patient kneels on the flap, and places both his arms on the neck and shoulders of two gymnasts, standing one on each side of him, as in *felling*. (See page 164.) He then inclines his whole trunk and thighs forwards, assisted by the gymnasts, and is raised from this position very slowly, till he is slightly reclined, as in *felling*. Before the patient is reclined, the third gymnast, standing before him, makes the vibration, with both his hands placed perfectly flat on the most prominent part of the thorax of the patient, his hands continuing the vibration during the alternate inclined and reclined position, into which the patient is brought passively. This vibration is done during twenty to thirty seconds, and, after a short pause, repeated two or three times.

Chest lifting, with abdomen vibration, is done in the stride fall low sitting position. The patient's legs are fixed by one or two gymnasts, a third, standing behind him on the chair, places his hands under the armpits, and lifts him a little upwards, while a fourth places one or both hands flat on the region of the liver of the patient, and then produces the vibration.

Abdomen vibration.

This movement is also called rib or hip vibration, according as the hands of the gymnast are placed on the false ribs, or the lower parts of the abdomen, above the hip-bone.

Stomach, liver, spleen, etc., vibration is the name of the movement, according to the different organs of the abdomen which are acted upon. There are two species of abdomen vibration, according as the patient is in a commencing position with the abdomen *tense* or *relaxed.*

Instances.—1. Span standing, loin vibration, with forwards pulling of the trunk.

The movement is combined with a forward pulling of the trunk. The vibrating hands of the gymnast, standing before the patient, are crossed on the lumbar vertebræ, so that his arms surround the patient in a similar way as in *loin stroking*, which is also frequently combined with it.

2. Half lying loin vibration, with loin lifting and stroking.

The gymnast, standing at the side or in front of the patient, places his hands on his loins, and makes the loin lift stroking (as described at page 74), at the same time bringing, by his vibrating hands, the patient's body into a vibratory motion.

3. Span grasp standing, stomach and stomach pit vibration, with loin lifting and stroking.

The gymnast supports with one hand the chine or loin of the patient, who is generally in a span position, and places the other hand on the pit of the stomach, the cœcum, the pylorus, or the lower curvature of the stomach, and vibrates particularly these organs.

4. Right span left speak grasp standing, liver vibration.

5. Left span right speak grasp standing, spleen vibration.

The gymnast, standing at the side of the patient, supports him with one hand placed on the lower hip, while he makes the vibration with the other hand placed on the liver, in Instance 4, or on the spleen, in Instance 5.

In the following instances the abdomen is *relaxed.*

6. Relaxed sitting, hip vibration.

The patient sits on a chair without a back, his hands hanging down, while the trunk and head are slightly bent and relaxed. Two gymnasts, kneeling or crouching, one before and another behind the patient, place their hands flat on the external side of the hip-bones, in such a way that the metacarpus, with the four long fingers, cover each other

mutually, while the thumbs cross each other. Each of the gymnasts places one hand on the hip of the patient, so that the right hand of the gymnast who is behind the patient is covered by the left hand of the other gymnast. The patient, being perfectly passive, the gymnasts keeping their hands steadily in the above-mentioned position, and pressing firmly, pull him to and fro, in such a way that, when the hands, resting on the right hip, force that hip forwards, the other hip is forced backwards, and this alternate movement is repeated quickly. In this way the whole body of the patient is slightly twisted and made to vibrate. Each gymnast makes, with the hand next to the patient's hip, the pulling, and with the other covering the hand of the other gymnast, makes the pushing movement. After fifteen to twenty pullings to and fro, a pause follows, during which the gymnasts rest. The vibration is thus repeated two or three times.

7. Relaxed sitting, right or left vibration is made on the right or left hip only; in this case, the hands press, while in the other they move the body to and fro.

8. Squat half lying, right or left hypogastric vibration.

The gymnast stands before the patient, and raises upwards and gently vibrates the right (or left) false ribs, with his slightly bent fingers, the tips of which are placed together beneath the false ribs, and directed upwards.

9. Inclined sitting, right hypogastric vibration.

10. Crooked standing, left hypogastric vibration.

In 9 and 10 the gymnast stands behind the patient.

Vibration of the whole body.

The patient is in lying or half lying position on the flap. Two gymnasts take hold each of one hand, two other gymnasts of the feet; a fifth gymnast, standing beside the patient, encircles the body with his arms round the loins, so that the fingers of his hands are on the lumbar vertebræ of the patient, crossing or covering each other. A sixth gymnast, near the head of the patient, takes hold with both hands of the back of the head, so that it rests on his hands. A

seventh and eighth gymnast, standing each on one side of the patient, place one of their hands in his armpits, and fix the patient, whom they prevent from being pulled off the couch by the gymnast who vibrates the legs. At the given word, the first six gymnasts vibrate their hands, and, consequently, all parts of the patient. After fifteen or twenty seconds, at another word of command, the six gymnasts at the same time cease vibrating. The movement is repeated two or three times.

Instrumental vibrations

Are produced by apparatus easily set vibrating, as, for instance, by the balancing bar, or ropes.

Instances.—1. Arm vibration, with a rope.

A rope from the ceiling of the room is doubled up, so as to form a sling, which is kept at such a height by a gymnast, that the sitting patient can grasp it with one hand, while the arm is a little bent. A second gymnast takes hold of the wrist and elbow-joints of the same arm, which he puts, simultaneously with the rope, into vibration.

2. Leg vibration on the balancing bar.

The leg of the patient, who is supported at the hips by a gymnast, is bent at the knee, and placed with the foot on the thinner and easily moveable end of the balancing bar, which is brought into a vibratory motion by a second gymnast, who takes hold, at the same time, of the patient's knee and foot.

3. Vibration of the whole body on the balancing bar.

The whole body is brought in a similar way as the leg into vibration, the patient, sitting on a saddle placed on the bar, or lying at full length on the bar, is prevented by the gymnast from falling down.

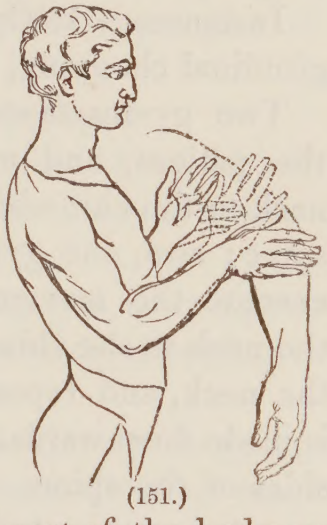
CHOPPING, POINTING, CLAPPING, TAPPING, KNOCKING, AND PERCUSSION

Are various kinds of percussion, made very quickly, one after another, forty to fifty times, especially when considerable surfaces are to be acted upon. Generally, after a short pause, the movement is repeated a second and, in the

same way, a third time. The gymnast should be well practised and adroit, and must get his wrist-joint very flexible, so that a true vibrating motion may be produced, and not merely a dead blow. The patient should not feel pain after the movement, not even after the knocking with the fist, but rather an agreeable sensation of warmth and liveliness.

CHOPPING

Is a kind of percussion made generally with the ulnar edges of both hands, which are moved alternately up and down; while one hand is bent towards the ulna, the other is bent towards the radius, and so on alternately; the thumbs of both hands are directed upwards, as seen in fig. 151.



(151.)

The fingers are kept apart, and very flexible, while the movement is done so that at each chop the fingers clap together. When the chopping is to act more gently, the inside of the hands is made more hollow, with the fingers slightly bent. The upper and forearms should be kept steady, and somewhat bent. The chopping is frequently done with one hand only. The part of the body on which the chopping is done should be rather tense than relaxed, especially when there is no bony surface immediately beneath.

Arm and leg chopping.

The hands of the gymnast are placed transversely on the limb to be acted upon. Fig. 151 illustrates the alternate up and down movements of the hands; the right hand is down, while the left is up, and the dotted lines show the contrary position. The hands of the gymnast progress during the chopping downwards.

Head longitudinal chopping

Is made from the forehead to the occiput, over the highest

part of the head. The *lateral head chopping* is done on the os parietale. The general choppings, commonly called head choppings, are done on all the hairy parts of the head, as well as on the forehead. *Circular head chopping* is done in the direction of the basis cranii round the head. These movements are generally combined with pressure and stroking.

Back chopping.

The direction of the movement is either along both sides of the spine (*linear back longitudinal chopping*), or in a transversal direction to the spine (*transversal back longitudinal chopping*).

Instances.—1. Opposite inclined standing, linear back longitudinal chopping, with stroking.

Two gymnasts stand one on each side, and rather behind the patient, and make a chopping with one hand, from the neck to the chine-bone, very near and on both sides of the spine; also, one gymnast, standing behind the patient, may execute the movement. After twenty to thirty chops, from the neck to the chine-bone, the movement is recommenced at the neck, and repeated two or three times; *then* a stroking is made downwards, with the hands pressing firmly on both sides of the spine. This alternate chopping and stroking is repeated once or twice.

2. Forwards leg lying, transversal back longitudinal chopping.

The gymnast begins with one hand at the neck of the patient, and performs the chopping transversely on the spine, the hand gradually working down, as far as the chine-bone.

3. Opposite standing, linear back longitudinal chopping.

4. Swim hanging, linear back longitudinal chopping.

5. Stem lying, transversal linear back longitudinal chopping.

6. Tumble standing, linear back longitudinal chopping.

7. Star stem lying, linear transversal back longitudinal chopping.

8. Deep crooked standing, transversal back longitudinal chopping.

Chest chopping

Is made on the whole thorax, and also partly on the region of the back. Anterior and lateral chest *arch chopping* are varieties, as described in the following

Instances.—1. Span grasp standing, arch chopping, is made by both hands of one gymnast, standing before the patient, whose trunk he surrounds with his arms, so that the ulnar edges of his hands are placed on the shoulder-blades of the patient; the gymnast then chops on both sides, from the shoulder-blades across the greater arch of the ribs, first sideways, then forwards, and then upwards, so that the hands approach each other on the upper part of the sternum.

2. Span speak standing, chest arch chopping.

The arch chopping is done only on the side where the arm is raised, and afterwards on the other, when the arm position is changed.

3. Half lying, anterior chest chopping can be properly made on men only, and consists in transverse chopping on the anterior surface of the thorax.

4. Half span standing, chest right or left sideways chopping.

The movement on one side of the thorax is done as much as possible in the interstices of the ribs.

5. Right span standing, chest arch chopping.

6. Span speak grasp standing, lateral chest chopping.

7. Span reclined, double chest arch chopping.

8. Span kneeling, double lateral chest arch chopping.

9. Half span oblique stride sitting, lateral chest chopping.

10. Half lying, anterior chest chopping.

11. Swim hanging, lateral chest chopping,

12. Stem lying, lateral chest chopping.

13. Arch lying, anterior chest chopping.

14. Stretch forwards leg lying, double chest arch chopping, or anterior divergent chest chopping.

The gymnast chops in an arch, but not, as usual, from backwards forwards, but in the opposite direction, from forwards backwards.

Abdomen chopping

Is specified according to the different regions of the abdomen, and according to the larger organs on which the chopping is made; thus we have loin, liver, stomach, colon chopping, etc. On the part where the chopping is made, the integuments and muscles should be tense.

Muscle chopping

Is made in the same way as on other parts, and especially used on the muscles of the limbs.

POINTING

Is a slight percussion on different parts of the patient, made with the points of the spread and slightly bent fingers of the gymnast, the wrist-joints being kept in free and easy motion. One finger only may be used, as well as two, three, or all five; the elbow and shoulder joints are kept as steady as possible.

When pointing is done with one finger it is also called *point chopping,* and is principally used on those parts of the body which contain bones, under a thin layer of skin, tendons, or muscles; as, for instance, on the hairy parts of the head, on the upper parts of the face, on the forehead, and the region of the eyes, on the back of the metacarpus and metatarsus, etc. Pointing is seldom done where the integuments are tense (as, for instance, on the tense abdomen), on the loins, or on the muscles of the arms and legs.

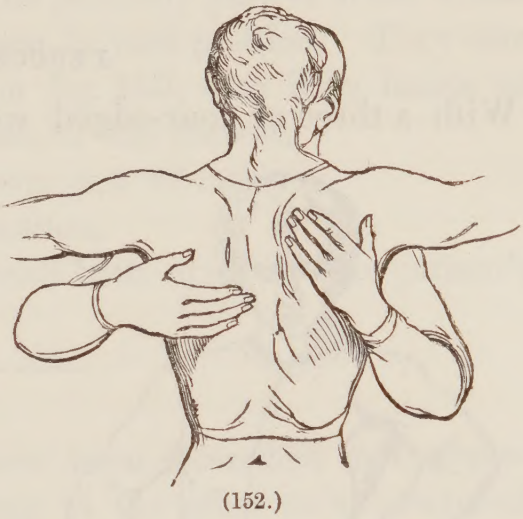
Longitudinal, circular, and lateral pointings of the head are similar in their direction to the corresponding chopping movement.

CLAPPING AND TAPPING.

Clapping is an alternate percussion with the palms of the hands, made in the same way as chopping. A similar per-

cussion made with the palmar side of the fingers only is called tapping.

Clapping is seldom performed on the head or limbs, but chiefly on the chest and, less frequently, on the abdomen.



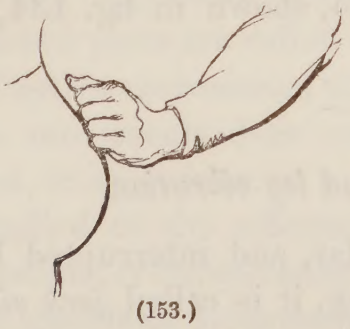
(152.)

Fig. 152 illustrates yard standing, chest clapping, made by the gymnast standing before the patient on whose back the clapping hands are seen. *Arch*, anterior, lateral, and posterior chest clapping are varieties of clapping.

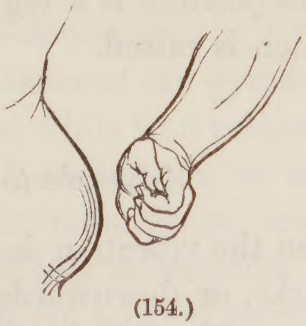
KNOCKING

Is a percussion made generally on the chine-bone by one hand of the gymnast, standing behind the patient, who is in opposite inclined position; the clenched fist strikes, while the joint of the hand is kept very moveable in a curved semicircle from one trochanter over the glutæi to the chine-bone, and thence to the trochanter of the other side; twenty to thirty knocks completing the curve.

The motion of the wrist is very free and easy; when the fist touches the chine-bone, the hand is turned inwards, as in fig. 153, and is turned outwards, as in fig. 154, before the knocking is made.



(153.)



(154.)

After three or four repetitions of the movement in the curved semicircular line, a stroking is made with the palm of

the hand on the glutæi and the chine-bone; then the half-circular knocking and stroking are alternately repeated two or three times.

PERCUSSION

With a three or four-edged wooden rod, about two inches wide, two inches thick, and ten to twelve inches long, is made only on the soles of the feet, while covered with the shoe. The gymnast, taking hold of the instrument with one hand, places the other hand on the foot of the patient, resting on his knee (see fig. 155), and strikes twenty to thirty times on the sole with the flat of the rod; after a pause, he repeats the percussion a second and a third time.

(155.)

Addenda to commencing positions.

Defence position is an arm position, similar to fig. 9, with the forearms bent upwards, from which it differs in the forearms and hands being turned forwards.

Wave position is a leg position, shown in fig. 134, by the leg which is raised.

Addenda to arm and leg vibration.

When the vibration is irregular, and interrupted by passive jerks, or downwards pulling, it is called *jerk vibration.* Twelve to fifteen jerk vibrations are done consecutively, and after a pause, the movement repeated three or four times.

Instances.—1. Yard sitting, double arm vibration.

Two gymnasts, standing one on each side of the patient, take hold each of the fingers of the perfectly passive arms, which they vibrate while holding them in yard position. They take hold, either as represented in fig. 150, with both hands or only with one hand, of the arm of the patient.

2. Lean standing, double arm jerk vibration.

3. Half lying, leg jerk vibration.

The gymnast takes hold with both arms of the patient's passive leg.

The movements which have been described in the preceding part are used according to the effect to be produced in various commencing positions; and in each individual case, according to the causes and symptoms, a certain number of such movements is arranged in the form of a prescription. To avoid repetition, I refer the reader (*a*) to the effects and indications of the principal classes of movements, (*b*) to the rules which guide the medical man in his selection of movements, and (*c*) to the rules which are to be observed by the patient, which are described in my book, "The Prevention and Cure of Disease by Movements."

Movements which increase the afflux of the arterial blood to the diseased organs are called *direct arterial* or *new formative* movements; to this class belong the half active movements, with resistance of the patient, and the passive movements, when done on parts in a state of tension. The same movements applied to organs which are more remote from the affected parts are called *arterial-derivative.*

Half active movements, with resistance of the gymnast, and passive movements done on organs while in a relaxed state (relaxed, in opposition to a state of contraction or tension), and applied to the affected organs themselves, are called *direct venous,* or *retroforming* or *absorbing* movements. Those passive absorbing movements which are applied on considerable parts of the body, in such a way that the affected organs are only partly influenced, and the half active movements

(G.R.) applied on muscles *near* the affected organs, are called *venous-derivative.*

Half active movements (P.R.) used in contraction of the muscular, tendinous, elastic, and other tissues of the various organs are called *relaxing* movements; while the half active movements (G.R.) used to counteract the relaxed state of the various tissues form the *contracting* movements. But to cure a contraction or relaxation, both classes of half active movements are employed, though not on the same organs, and passive movements also are combined with them.

Half active movements (P.R. and G.R.), made with the same muscles, are also called *strengthening* or *tonic* movements; and these combined with such passive movements as have the general effect of rousing or soothing the action of the nerves, as pressures on the nerves, pulling, chopping, knocking, and percussion, are also called *neurotonic.*

To assist the student of medical gymnastics in the selection of movements for the cure of various diseases, I have collected the following prescriptions as instances of medico-gymnastic treatment. I have affixed the name of each author at the head of each prescription or case.

SPINAL CURVATURE.

Amongst the number of curvatures which have been under my treatment there were some in which the convexity of the curve was directed laterally (scoliosis), or forwards (lordosis), or backwards (kyphosis); these were all the different stages, from the slight deviation to the entirely developed hump-back, and from a slight inclination sideways to the twisted double lateral curvature; in some of them ankylosis of several vertebræ, with angular projection backwards, occurred. Many of these cases were accompanied by pains in one or the other part of the spine, or in the thorax, in the interstices of the ribs, by contracted and narrow chest, oppression on the chest, by projection of one or the other shoulder, by palpitation of the heart, cough, predisposition to catch

cold, weakness and relaxation in some, and stiffness in others, pains in the ankle-joints, flabbiness of the muscles of the thorax and limbs, inability of exertion, dryness of the skin, headache, cold feet and cold hands, bad digestion, constipation, sickness, too copious or too scanty menstruation, general weakness, and insensibility of the cutaneous nerves.

The majority of these cases were either cured or considerably improved; and even the *worst* cases of distortion, where the whole spine was stiff, and inability of movement present, found some relief, partly by such movements as diminished the contractions and stiffness of several joints, and increased their power of breathing. None of the patients were obliged to remain for hours in a horizontal or reclined position; *no iron stays or other supports, neither stretching beds nor other mechanical contrivances were used.* The patients were allowed to remain as much as they liked in the most comfortable position; when sitting, to have always soft pillows to lean upon; and when lying, to do so on soft mattresses, with the whole back, or only the head, raised by a soft pillow, which was of a wedge form. I objected to riding on horseback, or to fatiguing walks, as long as the treatment lasted; and as in many of the lateral curvatures one ankle-joint becomes very relaxed, while the corresponding hip-joint is very stiff, a small slanting pad, to fill out the too large hollow of the foot, and to prevent the inner side of the joint from further projecting, was worn inside the shoe. The pad was made of cotton, horsehair, or wool, and was generally felt very comfortable. Great attention was paid to the various injurious occupations, to diet, and especially to dress. In numerous cases, the changes of the thorax were so considerable after the first four to six weeks, that all the dresses had to be changed. The majority of these patients were ladies; the age varied from four to fifty. I do not enter into further details, as I do not intend to write a monography of spinal deformities. Having at page 87 given the statement of a case of a lateral double spinal curvature, I will add only one more from my own practice of a *kyphosis*.

Spinal curvature with angular projection, backwards (kyphosis).

Master ———, nine years old, was affected in his second year with a spinal affection, which produced caries of the vertebræ and abscess, which opened on the right side of the thorax; he was examined July 18, 1854. His state was the following:—His height is below that of boys of his age; the head is large, and the face intelligent, but pale and sickly; the throat scarcely visible, as the head is imbedded between the shoulders, which are considerably raised; both sides of the thorax hollowed, while the middle of the sternum forms the most prominent part of an abnormal round vault, produced by the different position of the ribs, which are so shaped by the six lower dorsal vertebræ, forming almost a rectangular projection; the ulcerative process has subsided, and there is no pain in the back, which, as well as the thorax, is very emaciated; the muscles of the arms and legs are flabby; all the joints of the extremities very relaxed. He is very lively, and able to run about, which he does in a peculiar way, throwing his knees inwards, and always one round the other. He is liable to catch cold, and suffers often from diarrhœa; his appetite is good. He is accustomed to lie much on a prone couch, as ordered by the medical gentleman under whose care he was.

I recommended sea air, and the following movements.

First prescription.

1. Half lying, breathing in three motions; viz., to breathe in (active), to retain the breath while the gymnast slightly presses on both sides of the chest, and to breathe out (4 to 6 times).

2. Lying, arm extension outwards (6 times, active).

Note.—These and other active movements are described in my translation of Ling's "Free Exercises."

3. Lying, arms extension downwards (6 times, active).

4. Stretch trunk and thigh lying, knee extension (G.R.) (3 times).

5. Trunk and thigh lying, knee flexion (P.R.)
6. Repetition of No. 1.
7. Half lying, arm fulling.
8. Lying, arm extension upwards (3 times, active).
9. Rack lying, arm extension (G.R.)
10. Stride lying, alternate leg rotation (6 to 8 circles, active).
11. Trunk lying, leg fulling.
12. Half lying, chest intercostal and loin stroking.

These preparatory movements were used at home till he was brought to my Institution.

Second prescription, November 7, 1854.

1. Lying, foot flexion (G.R.) and extension (P.R.)
2. Trunk and thigh lying, knee flexion (P.R.) and extension (G.R.)
3. Leg lean trunk and thigh lying, alternate knee extension (P.R.)
4. Rack lying, arm extension (P.R. and G.R.)
5. Stretch lying (with active pushing of the heels), double upper and forearm flexion (G.R.) and extension (P.R.), and slight chest pressure.
6. High stride sitting, alternate trunk twisting (at the commencement only active), later (G.R.)
7. Stretch lying, right leg separation (G.R.) and adduction (P.R.)
8. Stretch stride lying, left leg adduction (G.R.) and abduction (P.R.)
9. Abdomen opposite crooked close standing, trunk raising (G.R.)
10. Lying, active arm extension outwards, from half forwards and fully forwards bent arm position.
11. Forearm support stomach lying, longitudinal back stroking and transversal back stroking.

These movements were done twenty-four times in the course of one month, during which the persons who had the care of the boy were taught their exact execution.

Third prescription, December 1, 1854

(which contained also several active movements, was continued at home).

1. Lying, foot flexion (G.R.)
2. Lying, foot extension (G.R.)
3. Lying, foot extension (P.R.)
4. Rack lying, arm extension (P.R.)
5. Rack lying, arm extension (G.R.)
6. Yard lying, double arm flexion (P.R.)
7. Yard lying, double arm down pressure (G.R.)
8. High leg lean trunk thigh stride lying, knee extension (G.R.)
9. Leg lean trunk and thigh stride lying, knee extension (P.R.)
10. High leg lean trunk and thigh stride lying, knee flexion (P.R.)
11. Stretch high lying, double upper and forearm flexion (G.R.)
12. Heave high lying, double arm extension upwards (P.R.)
13. Stretch stride lying, leg adduction (P.R.)
14. Stretch lying, leg separation (G.R.)
15. Yard stride sitting, trunk alternate twisting (active).
16. Stretch stride sitting, trunk alternate sideways flexion.
17. Half lying, fulling of the arms.
18. Lying, leg rotation (active).
19. Lying, arm extension outwards, from half forwards and fully forwards bent position.
20. Yard standing (with assistance), active foot position in one distance forwards and backwards.
21. Forearm support stomach lying, transverse back stroking and loin lifting.
22. Lying, longitudinal arm down stroking and leg down stroking.

In July, 1855, the anterior projection, which began to diminish in November, disappeared almost entirely; of the throat, two to three inches are seen; the shoulders are several inches lower; the upper and lateral muscles of the trunk are

much more developed, and more firm, as well as the muscles of the ribs; his appearance and position are improved, and his whole constitution is invigorated.

During the month of July, he attended nine times at the Institution.

Fourth prescription, July 3, 1855.

1. Lying, forearm flexion (G.R and P.R.)
2. Lying, forearm extension (G.R. and P.R.)
3. Lying, leg outwards turning (G.R.)
4. Yard lying, forearm in and outwards twisting (G.R.)
5. Stretch lying, leg raising (P.R.), and downwards guiding (G.R.)
6. Forwards climbing on the vertical mast.
7. Yard lying, clenched fist bending (P.R.) and stretching (G.R.)
8. Leg lying trunk twisting (G.R. and P.R.)
9. Lying, arm movements in different levels (active).
10. Yard standing, feet open and close, and one foot placed forwards.
11. Stretch hip lean standing, sideways flexion (P.R.)
12. Forearm support forwards lying, trunk raising (active) and holding.
13. Half lying, spinal longitudinal and transversal stroking.
14. Lying, head flexion, and turning to the right and left.
15. Stretch lying, trunk twisting (active).

The movements 6 and 8 were omitted when he left for the country, and the active movements 14 and 15 substituted. This case is one of those which are generally neglected, because the ossicular ankylosis of vertebræ cannot be cured; but as such a kyphosis produces so many other bad consequences which injure the constitution, the treatment should be directed against these. The results obtained in this case surpass expectation, and as the treatment will be probably continued as long as the improvement continues, there is no doubt that this boy, notwithstanding his local spinal affection, will recover perfectly in all other respects, and have a good appearance.

Ossicular kyphosis—Curvature of the spine backwards (Neumann).

A boy of twelve years was affected, in consequence of a spondilarthrocace of the lumbar vertebræ, with a strong and *pointed* kyphotic protrusion of the lumbar vertebræ; the trunk being considerably inclined to the right, a weakness of the right lower extremity, with pain, was caused when he tried to walk a long distance; symptoms of incipient paralysis were also manifested. All symptoms of inflammation or suppuration had disappeared, but a very considerable deviation remained. The gymnastic treatment lasted eight months. The patient lost the weakness and paralytic symptoms of the right leg, he could walk comfortably very long distances, the inclination of the trunk to the right disappeared almost completely, and, to my astonishment, even the kyphosis diminished, which I can explain only by the ankylosis not yet having been complete. Ten prescriptions were used, several of them at first contained very gentle movements, much caution being necessary. The following are the four last, and contained less gentle operations.

Kyphosis ossicularis.—Seventh prescription.

1. High short sitting, right leg down pressure (P.R.)
2. Right span right sideways falling, right knee raising (G.R.)
3. Right stretch left twist high stride sitting, trunk oblique back pulling (P.R.)
4. Left angle right speak stride thigh lean standing, right arm sideways and upwards guiding (P.R.)
5. Half lying, right leg rotation (P.R.)
6. Right rest left angle high stride sitting, trunk rotation.
7. Right span stride kneeling, trunk falling and trunk raising (G.R.)
8. Right stretch left heave trunk lying, right leg down pressure (P.R.), with right arm pulling.

9. Left heave grasp swim hanging, left leg separation (G.R.)

10. Right stretch forwards leg lying, back longitudinal chopping and stroking, with right arm and right leg pulling.

Eighth prescription.

1. Left speak left oblique stride high sitting, left arm sideways upwards guiding (G.R.)

2. Left yard thigh lean stride standing, left arm flexion (P.R.)

3. Right yard left speak high stride sitting, left arm sideways upwards guiding (P.R.), with right arm pressure.

4. Left stretch right cover trunk lying, double leg left guiding (G.R.), with left arm pulling.

5. Left stretch right cover left oblique leg lying, holding.

6. Left span right angle reclined right squat standing, right knee down pressure (P.R.), left knee raising (G.R.)

7. Left stretch left twist stride leg lying posture.

8. Left stretch left oblique standing, head back flexion (G.R.)

9. Left rest left oblique high stride sitting, left half trunk rotation.

10. Left stretch reclined thigh lean stride standing, trunk left sideways flexion (G.R.)

Ninth prescription.

1. Left stretch right angle left sideways trunk lying, double leg down pressure (P.R.), with left arm pulling.

2. Left stretch right cover reclined leg lying, trunk rotation, with left arm and right leg pulling.

3. Left span right angle twist ledge standing, trunk forwards twisting (G.R.)

4. Left span right angle reclined high right wave standing, right leg sideways down pressure (P.R.), and left leg sideways raising (G.R.)

5. Left stretch right cover swing trunk lying, pelvis rotation, with pulling and left arm pulling.

6. Left stretch leg lying, trunk alternate twisting (G.R.), with left arm pulling.

7. Left stretch left oblique forwards reclined leg lying, holding.

8. Left stretch stride leg lying, trunk left sideways pulling (P.R.)

9. Left stretch stride high sitting, left sideways flexion (G.R.)

10. Left stretch lying, left arm and right leg pulling, with loin left stroking and vibration.

Tenth prescription.

1. Stretch thigh opposite stride deep crooked standing, trunk raising (G.R.)

2. Left stretch right cover reclined leg lying, trunk rotation, with left arm and right leg pulling.

3. Stretch long sitting, trunk back flexion (G.R.)

4. Stretch ledge standing, trunk alternate twisting (G.R.)

5. Stretch forwards reclined leg lying, holding.

6. Left step inclined standing, trunk raising (G.R.)

7. Stretch swing trunk lying, pelvis rotation, with double arm pulling.

8. Stretch left jump inclined sitting, trunk back flexion (G.R.)

9. Stretch stride inclined kneeling, trunk raising (G.R.)

10. Stretch high stride sitting, left sideways flexion (G.R.)

Lateral curvature of the spine to the right.

The following seventy-four movements are recommended by Neumann.

1. Left stretch right walk standing, head back flexion (G.R.), with left arm pulling.

2. Left stretch right walk stride kneeling, head back flexion (G.R.), with left arm pulling.

3. Left stretch high stride sitting, head back flexion (G.R.), with left arm pulling.

4. Right yard long stride sitting, head back flexion (G.R.), with arm pressure.

5. Left stretch deep crooked standing, head back flexion (G.R.)

6. Left stretch chine lean right half standing, head back flexion (G.R.)

7. Left span right speak grasp right half standing, head back flexion (G.R.)

8. Left span right angle leg forwards lying, head back flexion (G.R.)

9. Right angle swim hanging, head back flexion (G.R.)

10. Right angle stem lying, head back flexion (G.R.)

11. Stretch left oblique chine lean stride standing, right upper and forearm flexion (G.R.), with left arm pulling.

12. Stretch left twist high stride sitting, right upper and forearm flexion (G.R.), with left arm pulling.

13. Stretch right walk kneeling, right upper and forearm flexion (G.R.), with left arm pulling.

14. Stretch right half standing, right upper and forearm flexion (G.R.), with left arm pulling.

15. Stretch forwards leg lying, left oblique right upper and forearm flexion (G.R.), with left arm pulling.

16. Right stretch swim hanging, right upper and forearm flexion (G.R.), with right leg pulling.

17. Stretch reclined chine lean stride standing, right upper and forearm flexion (G.R.), with left arm pulling.

18. Left oblique left wing right stretch walk standing, right arm down pressure (P.R.)

19. Stretch left oblique chine lean stride standing, right arm down pressure (P.R.), with left arm pulling.

20. Stretch left twist high stride sitting, right arm down pressure (P.R.), with left arm pulling.

21. Left oblique right stretch stride deep crooked standing, right arm down pressure (P.R.)

22. Left oblique right stretch fall long stride sitting, right arm down pressure (P.R.)

23. Left oblique stretch forwards leg lying, right arm down pressure (P.R.), with left arm pulling.

24. Right stretch swim hanging, right arm down pressure (P.R.), with right leg pulling.

25. Left stretch right rack chine lean right walk standing, right arm extension (P.R.), with left arm pulling.

26. The same, and (G.R.)

27. Left stretch right rack fall chine lean standing, right arm extension (G.R. and P.R.), with left arm pulling.

28. Left stretch right rack left twist high stride sitting, right arm extension (G.R. and P.R.)

29. Left stretch right rack leg lying, right arm extension (G.R. and P.R.), with left arm pulling.

30. Left span right rack arch lying, right arm extension (G.R. and P.R.)

31. Left oblique right rack stem lying, right arm extension (G.R. and P.R.)

32. Left stretch right angle left oblique long sitting, trunk backwards flexion (G.R.), with head, left hand, and right shoulder pressure.

33. Left stretch right angle left oblique deep crooked standing, trunk raising (G.R.)

34. Left stretch right angle, left twist right walk kneeling, trunk back flexion (G.R.), with chine pressure.

35. Left stretch right angle inclined high stride sitting, trunk back flexion (G.R.)

36. Left stretch left oblique right angle chine lean stride standing, trunk back pulling (P.R.), with head and double shoulder pressure.

37. Left stretch right angle right twist high stride sitting, trunk backwards pulling (P.R.), with head and double shoulder pressure.

38. Left stretch right angle chine lean right half standing, trunk back pulling (P.R.), with head double shoulder pressure.

39. Left stretch right angle right walk kneeling, trunk back pulling (P.R.), with head pressure and knee chine pressure.

40. Left stretch right angle long stride sitting, back pulling (P.R.), with head double shoulder pressure.

41. Left stretch right angle right walk hip lean standing, trunk left sideways pulling (P.R.)

42. Left stretch right angle right twist high stride sitting, trunk left oblique forwards pulling (P.R.)

43. Left stretch right angle left twist long stride sitting, left oblique back pulling (P.R.)

44. Left stretch right angle chine lean stride standing, trunk left sideways flexion (G.R.), with left arm pressure.

45. Left stretch right cover trunk lying, double leg left sideways guiding (G.R.), with left arm pulling and double hip pressure.

46. Right angle swim hanging, double leg left guiding (G.R.)

47. Left span right angle standing, left leg sideways raising (G.R.)

48. Left stretch right cover trunk lying, double leg left pulling (P.R.), with left arm pulling and double hip pressure.

49. Left span right angle reclined right squat standing, right knee down pressure (P.R.), and left knee raising (G.R.)

50. Left span right angle right kick standing, right leg down pressure (P.R.), and left leg raising (G.R.)

51. Left span right speak grasp right squat standing, right knee down pressure (P.R.) (in different levels), and left knee raising (G.R.) (in different levels).

52. Left rest angle right angle left oblique high stride sitting, trunk rotation.

53. Left span right speak grasp right half standing, chest spanning (P.R.)

54. Right angle left oblique left stretch high stride sitting, left arm rotation with pulling (or P.R., without pulling).

55. Left stretch right cover trunk lying, pelvis rotation and pulling, with left arm pulling.

56. Left stretch right angle forwards leg lying, holding.

57. Left stretch left oblique leg lying, holding.

58. Left stretch right twist forwards leg lying, holding, and trunk left oblique down pressure (P.R.)

59. Left stretch right twist stride leg lying, holding.

60. Left span right angle reclined standing, right hip guiding (G.R.)

61. Left span right angle right kick standing, right hip guiding (P.R.)

62. Left stretch right cover lying, left stride rotation, with left arm and right leg spanning.

63. Left stretch head heel lying, holding, with left arm and right leg spanning.

64. Right cover swim hanging, back longitudinal chopping, and stroking with right leg pulling.

65. Left stretch right cover lying, right leg inwards twisting (P.R.) and left leg outwards twisting (G.R.), with left arm pulling.

66. Left stretch right cover ledge standing, trunk plain twisting, with left arm pulling.

67. Left stretch right angle right walk chine lean standing, trunk alternate twisting, with left arm pulling.

68. Left stretch right angle right walk kneeling, trunk left arch twisting, with left arm pulling and knee chine pressure.

69. Left span right angle right kick standing, trunk plain twisting.

70. Left stretch reclined forwards leg lying, trunk alternate twisting, with left arm and right leg spanning.

71. Left stretch high stride sitting, right arm flying (in the direction from upwards, backwards, and downwards).

72. Right angle swim hanging, pelvis rotation, with double hip pressure.

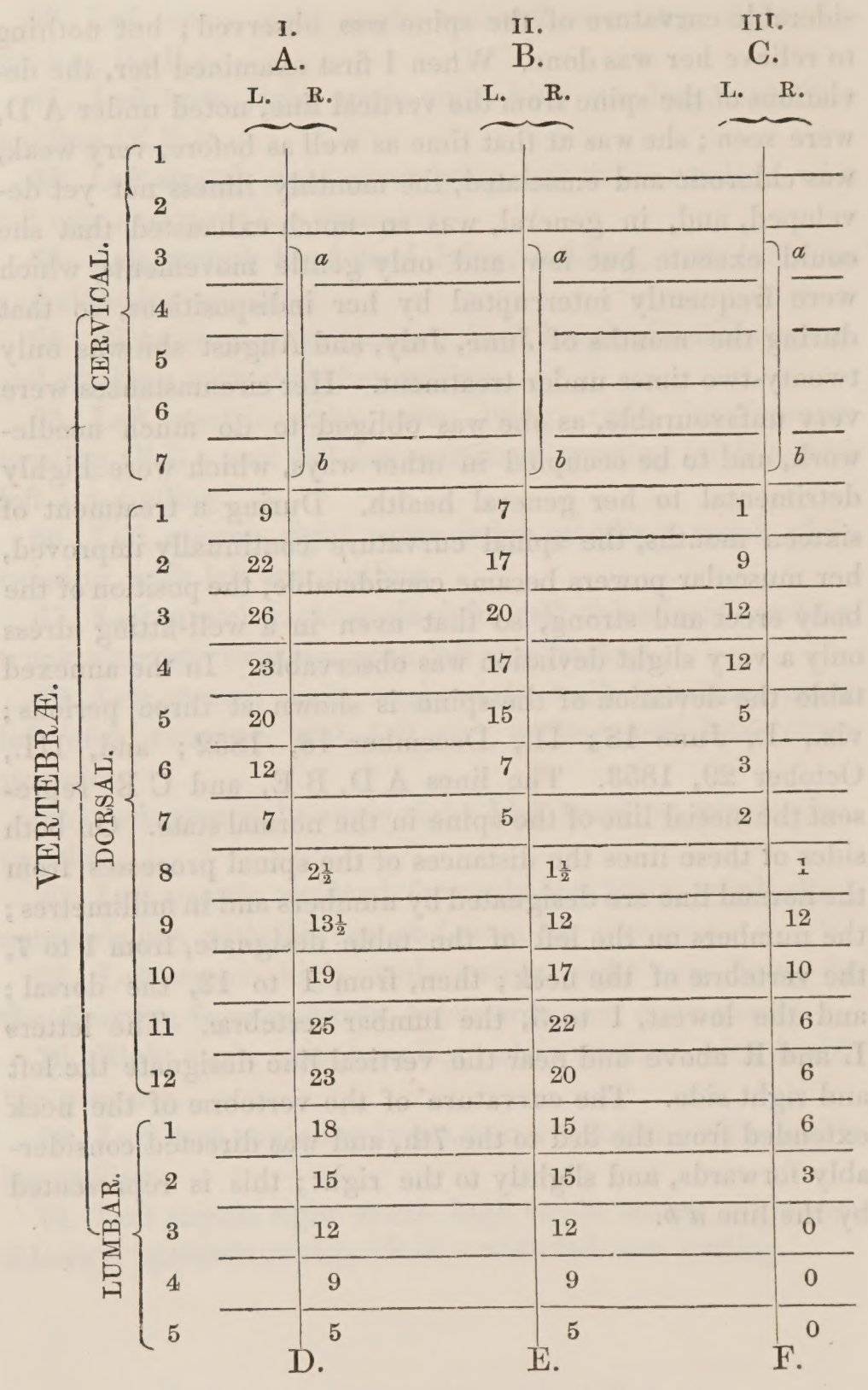
73. Left rest angle leg lying, trunk rotation, with double leg pulling.

74. Left stretch right speak high stride sitting, right arm sideways upwards raising (P.R.), with left arm pulling.

Lateral curvature of the spine (Weber).

Miss C. R., seventeen years old, began her treatment the 17th June, 1852. When four or five years old, a con-

siderable curvature of the spine was observed; but nothing to relieve her was done. When I first examined her, the deviations of the spine from the vertical line, noted under A D, were seen; she was at that time as well as before, very weak, was chlorotic and emaciated, the monthly illness not yet developed, and, in general, was so much exhausted that she could execute but few and only gentle movements, which were frequently interrupted by her indispositions, so that during the months of June, July, and August she was only twenty-two times under treatment. Her circumstances were very unfavourable, as she was obliged to do much needle-work, and to be occupied in other ways, which were highly detrimental to her general health. During a treatment of sixteen months, the spinal curvature continually improved, her muscular powers became considerable, the position of the body erect and strong, so that even in a well-fitting dress only a very slight deviation was observable. In the annexed table the deviation of the spine is shown at three periods; viz., I., June 18; II., December 18, 1852; and, III., October 29, 1853. The lines A D, B E, and C E represent the mesial line of the spine in the normal state. On both sides of these lines the distances of the spinal processes from the normal line are designated by numbers and in millimetres; the numbers on the left of the table designate, from 1 to 7, the vertebræ of the neck; then, from 1 to 12, the dorsal; and the lowest, 1 to 5, the lumbar vertebræ. The letters L and R above and near the vertical line designate the left and right side. The curvature of the vertebræ of the neck extended from the 3rd to the 7th, and was directed considerably forwards, and slightly to the right; this is represented by the line *a b*.



First prescription.

1. Hanging in Glisson's instrument.

2. Right rest left angle right hip lean right walk standing, right sideways flexion (G.R.)

3. Stride sitting, head back flexion (G.R.)

4. Right rest thigh opposite deep crooked standing, trunk back raising (G.R.)

5. Right rest left angle leg lean thigh trunk lying, trunk raising and back flexion (active).

6. Stretch inclined stride sitting, trunk back raising (G.R.)

7. Stretch right oblique chine lean stride standing, left upper and forearm flexion (G.R.), with right arm pulling.

8. Stretch walk standing, trunk alternate sideways flexion, with double arm down pressure (P.R.)

9. Right span left speak grasp standing, chest spanning (P.R.)

Second prescription.

1. Hanging in Glisson's instrument.

2. Right rest left angle leg lean thigh trunk lying, trunk raising and back flexion (active).

3. Right stretch left rack chine lean left walk standing, left arm extension (P.R.), with right arm pulling.

4. Stride sitting, head back flexion (G.R.)

5. Right rest thigh opposite deep crooked standing, trunk back raising (G.R.)

6. Stretch right oblique chine lean stride standing, left upper and forearm flexion (G.R.), with right arm pulling.

7. Inclined sitting, head back flexion (G.R.)

8. Right yard right twist high stride sitting, trunk forwards twisting (G.R.)

9. Left angle standing, active movement, with the right hand holding a dumb-bell.

10. Right stretch left rack chine lean walk standing, left arm extension (G.R.), with right arm pulling.

Third prescription.

1. Hanging in Glisson's instrument.

2. Right rest left angle leg lean thigh trunk lying, trunk raising and back flexion (active).

3. Stride sitting, head back flexion (G.R.)

4. Right span left speak grasp left half standing, chest spanning (P.R.)

5. Right rest yard right oblique chine lean left walk standing, left arm sideways downwards guiding (P.R.)

6. Right stretch left cover lying, trunk raising and forwards flexion (G.R.)

7. Right stretch left angle right twist inclined high stride sitting, trunk back raising and back flexion (G.R.)

8. Right stretch left rack chine lean left walk standing, left arm extension, with right arm pulling.

9. Right span left yard chine lean stride standing, left arm sideways downwards guiding (P.R.)

Fourth prescription.

1 and 2 as in the previous prescription.

3. Inclined standing, head back flexion (G.R.)

4. Span stride hanging, double leg adduction (P.R.)

5. Right stretch left angle right hip lean standing, trunk right sideways flexion (G.R.)

6. Left stretch right span right oblique left hip lean standing, left arm sideways downwards guiding (P.R.)

7. Right stretch left cover right oblique lying, trunk raising and flexion forwards, with right leg extension.

8. Rack high stride inclined sitting, right arm extension, with left arm sideways downwards guiding (P.R.)

9. Right span left heave grasp standing, hip left guiding (G.R.)

10. Right stretch left speak grasp standing, trunk right back twisting (G.R.)

Lateral curvature of the spine to the right (Neumann).

Miss C., seventeen years old, suffered from lateral curvature to the right, with a considerable curve forwards (lordosis) of the lumbar vertebræ, and inclination of the chest forwards.

First prescription, January 4, 1855.

1. Left rest angle right yard right walk left hip lean right oblique standing, alternate trunk left sideways flexion (G.R.) and left sideways pulling (P.R.)

2. Star right walk fall (deep crooked) standing, alternate trunk forwards flexion (G.R.) and back flexion (G.R.)

3. Span hanging, alternate double leg separation (P.R. and G.R.)

4. Heave grasp standing, head alternate forwards flexion (G.R.) and back flexion (G.R.)

5. Left stretch right angle left twist high stride sitting, alternate trunk left oblique back flexion (G.R.) and left oblique back pulling (P.R.)

6. Left stretch right angle right twist high stride sitting, alternate left oblique forwards flexion (G.R.) and left oblique forwards pulling (P.R.)

7. Span swing standing, leg alternate forwards pulling (G.R. and P.R.)

8. Left stretch right yard stride fall (inclined) standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)

9. Left stretch right yard stride left twist standing, alternate trunk forwards twisting (P.R. and G.R.)

10. Left stretch right yard left twist stride thigh opposite fall (inclined) standing, alternate trunk forwards inclination (G.R.) and back flexion (G.R.)

Second prescription, February 4, 1855.

1. Left stretch right yard right oblique stride standing, alternate trunk left sideways flexion (G.R.) and left sideways pulling (P.R.), with left hand pulling and right hand pressure.

2. Left stretch right rack stride kneeling, right arm alternate extension (G.R. and P.R.), with right hand pressure.

3. Left stretch right angle stride fall standing, alternate trunk forwards inclination (G.R.) and forwards pressure (P.R.), with head shoulder pressure.

4. Left stretch right yard left twist stride long sitting, alternate trunk left oblique back flexion (G.R.) and left oblique back pulling (P.R.)

5. Stretch trunk lying, double leg separation (P.R.) and adduction (P.R), with double hand and double foot pulling.

6. Left span right stretch close standing, right arm alternate sideways, downwards guiding (G.R. and P.R.)

7. High peg grasp kick standing, leg alternate back pulling (P.R. and G.R.)

8. Left stretch right wing forwards leg lying, alternate down pressure (P.R. and G.R.)

9. Left stretch right yard left twist stride kneeling, alternate left oblique back flexion (G.R.) and left oblique back pulling (P.R.)

10. Left stretch right yard right twist stride kneeling, alternate trunk left oblique forwards flexion (G.R.) and left oblique forwards pulling (P.R.), with double hand and double leg pressure.

11. Star stem lying, holding.

Lateral curvature of the spine to the right,

With considerable lordosis inclination of the head forwards, and kyphatic protrusion of the right shoulder-blade, and of the right ribs backwards and sideways (Neumann).

1. Left stretch right yard close thigh opposite inclined right oblique standing, alternate left sideways flexion (G.R.) and left sideways pulling (P.R.), with left hand and right armpit pulling.

2. Left stretch right yard right twist close thigh opposite deep crooked standing, alternate forwards twisting (G.R.) and back twisting (P.R.), with left hand and right armpit pulling.

3. Left rest angle right yard high stride inclined sitting, alternate back pulling (P.R.) and forwards inclination (G.R.), with double armpit pulling.

4. Span kick standing, leg alternate back pulling (G.R.) and forwards pulling (P.R.)

5. Left stretch right defence inclined high stride sitting,

alternate right upper and forearm extension (G.R.) and flexion (P.R.), with right back pressure and donble hand pulling.

6. Left stretch right yard forwards leg lying, raising (G.R.) and down pressure (P.R.), with left hand and right armpit pulling.

7. Left stretch right defence stride thigh opposite deep crooked standing, alternate right upper and forearm extension (P.R.) and flexion (G.R.), with pressure on the right side of the back and double hand pulling.

8. Left rest angle right angle right oblique inclined thigh lean kneeling, alternate left sideways flexion (G.R.) and left sideways pulling (P.R.)

9. Left span right yard grasp close standing, head alternate forwards flexion (P.R.) and back flexion (G.R.)

10. Span hanging double leg, alternate separation (G.R.) and adduction (P.R.)

Lateral curvature of the spine to the right,

With considerable lordosis and slight involuntary movements, similar to those in St. Vitus's dance (Neumann).

1. Left stretch right angle closet high opposite inclined standing, alternate back flexion (G.R) and forwards pressure (P.R.)

2. Left stretch right yard inclined stride kneeling, alternate back pulling (P.R.) and forwards inclination (G.R.)

3. Left span right stretch stride sitting, alternate right upper and forearm flexion (P.R.) and extension (G.R.)

4. Span kick standing, leg alternate back pulling (G.R.) and forwards pulling (P.R.)

5. Left stretch right yard right twist right oblique high stride sitting, alternate left oblique forwards flexion (G.R.) and left oblique forwards pulling (P.R.)

6. Left span right rack stride sitting, right arm alternate extension (G.R. and P.R.)

7. Stretch close thigh opposite right oblique deep crooked standing, alternate left sideways flexion (G.R.) and left sideways pulling (P.R.)

8. Left stretch right yard forwards leg lying, alternate raising (G.R.) and down pressure (P.R.)

9. Stretch kick lying, leg alternate down pressure (P.R.) and raising (G.R.), with double hand pulling.

10. Left stretch right yard left twist close thigh opposite deep crooked standing, alternate back twisting (P.R. and G.R.)

Lateral curvature of the spine to the right, contraction of the pectoral muscles, and immobility of both shoulder-joints, especially in the guiding of the arms upwards and backwards (Neumann).

1. Stretch stride fall standing, forwards pressure (P.R.) and back flexion (G.R.), with double hand pulling.

2. Stretch trunk leg lying, double arm rotation, with pulling, and pressure on the back part of the head.

3. Stretch right walk right oblique left hip lean standing, alternate left sideways flexion (G.R.) and left sideways pulling (P.R.)

4. Heave grasp standing, head alternate forwards flexion (P.R.) and back flexion (G.R.)

5. Left stretch right yard fall high stride sitting, alternate forwards pressure (P.R.) and back flexion (G.R.)

6. Stretch stride sitting, double arm flying, with knee back pressure.

7. Span stride hanging, double leg alternate adduction (P.R.) and separation (G.R.)

8. Left span right yard grasp standing, chest spanning (P.R. and G.R.)

9. Stretch high stride right twist sitting, alternate trunk forwards twisting (G.R.) and back twisting (P.R.)

10. Left stretch right yard leg lying, holding.

Lateral curvature of the spine to the right (Neumann).

A youth of sixteen, affected with lateral curvature of the spine to the right, has been treated during eighteen months in an Orthopædic Institution by machines; he was unable, even during the night, to leave off a corset with strong whalebones, without feeling a pressing and pulling pain in the

chest. At the commencement of the treatment, the spirometer of Phœbus marked 1800; four months later it marked 2000; the pains of the chest disappeared entirely, the curvature was improved, but not yet cured. The following four prescriptions were used, the first contained some which act on both sides and on the whole body, in order to rouse the action of the muscles, almost paralysed by the machine treatment.

First prescription.

1. Stretch inclined high stride sitting, back raising (G.R.), with double hand pressure.
2. Yard twist walk standing, trunk forwards twisting (G.R.), with double hand pressure (right walk left twist.)
3. Half stretch thigh opposite stride fall standing, forwards pressure (P.R.), with hand pressure.
4. Half lying, foot rotation.
5. Half yard high stride sitting, trunk sideways flexion (G.R.), with hand pressure.
6. Half rack high stride sitting, arm extension (G.R.), with hand pressure.
7. Half rest hip lean walk standing, trunk sideways pulling (P.R.), with elbow pressure.
8. Rack span thigh opposite deep crooked standing, trunk back raising (G.R.), with double hand pressure.
9. Span standing, leg sideways raising (G.R.)
10. High stride twist sitting, trunk forwards twisting (G.R.)

Second prescription.

1. Left stretch right angle right walk inclined standing, trunk back raising (G.R.), with hand pressure.
2. Left stretch right angle right heel support standing, trunk left sideways flexion (G.R.), with hand and knee pressure.
3. Left stretch right yard stride fall kneeling, trunk forwards flexion (G.R.), with double hand and double leg pressure.
4. Stretch high stride sitting, right upper and forearm flexion, with left arm pulling.

5. Span right squat standing, right knee down pressure (P.R.) and left knee raising (G.R.)

6. Stretch lying, pelvis rotation, with double arm pulling.

7. Left stretch right angle stride falling, thigh opposite standing, forwards pressure (P.R.), with hand pressure.

8. Stretch stride twist sitting, trunk forwards twisting (G.R.)

9. Left stretch right yard short stride sitting, double leg adduction (P.R.)

10. Left stretch right angle right walk standing, trunk left sideways pulling (P.R.), with hand hip pressure.

Third prescription.

1. Span right wave standing, right leg down pressure (P.R.)

2. Left span right yard grasp left swing standing, left leg forwards pulling (G.R.), and right kick standing, right leg pulling (P.R.)

3. Rest forwards leg lying, trunk down pressure (P.R.) and raising (G.R.), with double elbow pressure.

4. Stretch stride thigh opposite deep crooked standing, trunk back raising (G.R.), with double hand pressure.

5. Left stretch right angle lying, trunk raising (G.R.), with hand and head pressure.

6. Left stretch right yard stride thigh opposite kneeling, trunk forwards pressure (P.R.)

7. Stretch stride inclined kneeling, trunk back raising (G.R.), with double hand pressure.

8. Left stretch right yard stride long sitting, trunk back pulling (P.R.)

9. Stretch right twist right oblique high stride sitting, trunk left oblique forwards flexion (G.R.)

10. Left stretch right rack high stride sitting, right arm extension (G.R.)

11. Left sideways half lying, chest arch chopping and stroking.

Fourth prescription.

1. Star stem lying, holding.

2. Tumble standing, left leg raising (G.R.)

3. Left stretch right heave right twist stride standing, trunk oblique forwards flexion and holding.

4. Left stretch right yard trunk lying, double leg left guiding (G.R.), with double hand pressure.

5. Left rest angle right yard stride left twist standing, trunk oblique back flexion and holding.

6. Left stretch right yard forwards leg lying, trunk down pressure (P.R.) and raising (G.R.)

7. Stretch trunk lying, double leg left pulling (P.R.), with double arm pulling.

8. Left rest left twist leg lying, trunk forwards twisting (G.R.)

9. Left stretch right yard stride left twist leg lying, holding.

10. Left rest angle right yard stride standing, trunk left sideways flexion and holding.

11. Left sideways half lying, chest arch chopping and stroking.

Lateral curvature of the spine to the right (Neumann).

A girl, thirteen years old, suffering from lateral curvature to the right side, in the second stage, was cured in five months by the following movements.

First prescription.

1. Left span right speak grasp right squat standing, right knee down pressure (P.R.) and left knee raising (G.R.)

2. Left stretch stride high sitting, trunk back flexion (G.R.)

3. Stretch trunk lying, double leg left pulling (P.R.), with double arm pulling.

4. Left stretch thigh opposite inclined stride standing, trunk raising (G.R.), with arm, head, and shoulder pressure.

5. Half lying, foot rotation.

6. Left span right speak grasp reclined standing, abdomen vibration.

7. Left rest high stride sitting, trunk rotation.

8. Left stretch trunk lying, left leg raising (G.R.) and right leg down pressure (P.R.)

9. Half lying, stride rotation.

10. Left stretch stride sitting, chest lifting, with vibration.

Nos. 5, 6, 9, 10 were used, because she suffered from cold feet, asthma, and affection of the mucous membranes of the abdomen.

Second prescriptiun.

1. Left stretch left twist stride sitting, trunk left oblique back flexion (G.R.)

2. Left span right speak grasp high right kick standing, right leg down pressure (P.R.), in different *levels*.

3. Left stretch right angle left twist stride kneeling, trunk forwards twisting (G.R.), with knee chine pressure.

4. Left stretch thigh lean stride standing, trunk left sideways pulling (P.R.), with left hand, head, and right shoulder pressure.

5. Left stretch right angle forwards reclined leg lying, holding and down pressure (P.R.)

6. Left span right angle right stride swim hanging, right leg adduction (P.R.)

7. Left stretch right cover trunk lying, double leg left guiding (G.R.), with arm pulling.

8. Left stretch right speak high stride sitting, right arm sideways and upwards guiding (P.R.)

9. Left stretch right cover high trunk lying, pelvis rotation with pulling.

10. Left stretch right angle thigh opposite deep crooked standing, and trunk left sideways pulling (P.R.)

Third prescription.

1. Left stretch thigh lean stride standing, trunk left sideways flexion (G.R.)

2. Left span right angle high right wave standing, right

leg sideways down pressure (P.R.), and left leg sideways raising (G.R.)

3. Left stretch right angle thigh opposite deep crooked standing, trunk left sideways flexion (G.R.)

4. Left stretch left twist stride sitting, trunk left oblique back pulling (P.R.)

5. Left span right angle reclined standing, right hip guiding (G.R.)

6. Left stretch right cover trunk lying, double leg left guiding (G.R.), with arm pulling.

7. Left stretch right walk standing, head back flexion (G.R.)

8. Left stretch right angle forwards trunk lying, double leg left guiding (G.R.)

9. Stretch left oblique trunk lying, double leg down pressure (P.R.), with double arm pulling.

10. Right angle swim hanging, right leg rotation, with pulling.

Fourth prescription.

1. Left stretch right angle thigh opposite deep crooked standing, trunk back raising (G.R.)

2. Left rest angle right angle long stride sitting, trunk back flexion (G.R.)

3. Left stretch right speak left wave reclined standing, holding.

4. Left stretch right yard stride deep crooked kneeling, trunk back raising (G.R.), with double hand and head pressure.

5. Left rest angle right angle left jump inclined sitting, trunk back raising (G.R.)

6. Rest leg forwards lying, trunk down pressure (P.R.) and raising (G.R.)

7. Left stretch right yard trunk lying, double leg left guiding (G.R.), with left arm pulling and right arm pressure.

8. Left stretch right angle standing, trunk back flexion (G.R.)

9. Left stretch right heave forwards leg lying posture.

Lateral curvature of the spine to the right (Nitzsche).

F. G. B., eighteen years old, pupil at the seminary of G., suffered from muscular curvature of the spine to the right. The spine had the sigmoid form; the upper curve was most prominent in the third and fourth dorsal vertebræ; the lower curve in the twelfth dorsal and first lumbar vertebræ. He was cured after two months' treatment by the two following prescriptions.

First prescription.

1. Left rest right angle left twist high stride sitting, left forwards twisting (G.R.), with left elbow and right armpit pulling.

2. Left stretch right angle stride thigh lean deep crooked standing, trunk back raising (G.R.), with left hand and right armpit pulling.

3. Left stretch right angle high stride right oblique sitting, left sideways pulling (P.R.), with left hand and right armpit pulling.

4. Left stretch right cover right squat half lying, right knee down pressure (P.R.), with left hand and right armpit pulling.

5. Left stretch leg forwards lying, holding.

6. Left stretch right rack right walk kneeling, right arm extension (G.R.), with left hand pulling, and right shoulder and right hand pressure.

7. Left span right yard grasp standing, left knee raising (G.R.)

8. Left stretch right cover trunk lying, double leg left guiding (G.R.), with left hand and right armpit pulling.

9. Right yard left speak high stride sitting, left arm sideways upwards guiding (P.R.), with right hand pressure.

10. Left stretch right yard high stride fall sitting, trunk raising and forwards flexion (G.R.), with left hand and right armpit pulling.

Second prescription.

1. Left stretch right angle high stride sitting, trunk left sideways flexion (G.R.), with left hand and right armpit pulling.

2. Left stretch right rack stride kneeling, right arm extension (G.R.), with left hand pulling.

3. Left rest right angle right walk left hip lean standing, trunk left sideways flexion (G.R.), with left elbow and right armpit pulling.

4. Left rest angle right yard stride standing, head back flexion (G.R.)

5. Left stretch right yard high stride right oblique sitting, left sideways pulling (P.R.), with left hand and right armpit pulling.

6. Right yard left speak stride standing, left arm sideways upwards guiding (P.R.), with right hand pressure.

7. Left stretch right yard forwards leg lying, trunk down pressure (P.R.), with left hand and right armpit pulling.

8. Left stretch right yard left twist standing, trunk forwards twisting (G.R.), with left hand and right armpit pulling.

9. Left stretch right angle right twist high stride sitting, left oblique forwards pulling (P.R.), with left hand and right armpit pulling.

10. Left span right yard grasp right wave standing, right leg sideways down pressure (P.R.), with abdominal downwards chopping and downwards stroking of the right side.

11. Left stretch right yard stride thigh opposite deep crooked standing, trunk back raising (G.R.), with left hand and right armpit pulling, with back longitudinal upwards chopping and upwards stroking.

12. Left stretch right yard trunk lying, double leg left guiding (P.R.), with left hand and right armpit pulling.

Lateral curvature of the spine to the left (Nitzsche).

H. D., sixteen years old, small and weak, affected with

lateral curvature to the left, began his treatment the 1st of July, 1853, and was scarcely able to resist in any strong half active movement (P.R.) The curve, as is frequently the case in left lateral curvatures, consisting only of a single arch, extending over the upper eight dorsal vertebræ. The 1st of November, 1853, the patient left, not only strong and stout, but perfectly straight, and two inches taller. The following three prescriptions were used.

First prescription, July 1, 1853.

1. Right stretch left angle inclined high stride sitting, trunk back raising (G.R.), with right hand, left shoulder, and head pressure.

2. Right stretch left speak left walk kneeling, left arm sideways upwards guiding (G.R.), with right arm pulling.

3. Right rest left angle right twist high stride sitting, trunk forwards twisting (G.R.)

4. Right stretch left cover trunk lying, double leg right guiding (G.R.), with right arm pulling.

5. Right stretch left yard thigh opposite deep crooked standing, trunk back raising (G.R.), with right hand and left armpit pulling.

6. Right stretch left angle high stride sitting, head back flexion (G.R.), with right hand pulling.

7. Right span left angle left squat half lying, left knee down pressure (P.R.)

8. Right stretch left angle high stride sitting, right sideways pulling (P.R.)

9. Right span left cover standing, right knee raising (G.R.)

10. Right span left speak grasp right wave standing, right leg sideways down pressure (P.R.)

11. Right span left speak grasp standing, left leg sideways raising (G.R.)

12. Right stretch left angle forwards reclined lying, holding.

Second prescription, August 15, 1853.

1. Right stretch left angle inclined high stride sitting, trunk back raising (G.R.)

2. Right stretch left cover trunk lying, double leg back guiding (G.R.), with right arm pulling.

3. Right rest angle left angle high stride sitting, left sideways pulling (P.R.), with right elbow and left armpit pulling.

4. Right stretch left angle standing, head back flexion (G.R.)

5. Left walk left hip lean standing, trunk left sideways pulling (P.R.), with double armpit pulling.

6. Right span left yard grasp high standing, left leg forwards pulling (P.R.)

7. Right stretch left speak kneeling, left arm sideways upwards guiding (G.R.), with right arm pulling.

8. Right stretch left yard high stride right oblique sitting, left sideways pulling (P.R.), with right hand and left armpit pulling.

9. Right span left yard grasp right kick standing, right leg back pulling (G.R.)

10. Right stretch left angle leg forwards lying, trunk left sideways flexion (G.R.), with right hand and left armpit pulling.

11. Right stretch left angle left twist high stride sitting, trunk right oblique forwards pulling (P.R.), with right hand and left armpit pulling.

12. Right stretch left speak standing, right upper and forearm flexion (P.R.)

Third prescription, September 25, 1853.

1. Right rest left angle high stride sitting, trunk left sideways flexion (G.R.)

2. Right stretch left rack stride standing, left arm extension (P.R.), with right arm pulling.

3. Right rest left angle left walk left hip lean standing,

trunk left sideways pulling (P.R.), with right elbow and left armpit pulling.

4. Right span left speak grasp left swing high standing, left leg forwards pulling (P.R.)

5. Right stretch left yard forwards leg lying, trunk left sideways flexion (G.R.), with right hand and left armpit pulling.

6. Right stretch left angle left hip lean kneeling, trunk left sideways flexion (G.R.), with right hand and left armpit pulling.

7. Right span left speak grasp high standing, right leg back pulling (G.R.)

8. Right stretch left cover trunk lying, double leg right guiding (P.R.)

9. Right stretch left angle stride standing, trunk left sideways flexion and holding (active).

10. Right stretch left angle standing, head back flexion (G.R.)

11. Right stretch left angle left twist high stride sitting, left oblique forwards flexion (G.R.)

12. Right stretch stride standing, right upper and forearm flexion (P.R.)

CONSUMPTION.

In the appendix to my book, "The Prevention and Cure of Diseases by Movements," I have put together the various movements and occupations recommended by the ancient and many modern physicians, as riding on horseback, the movements of a ship during a sea voyage, deep breathing, loud speaking, declaiming, singing, playing on a trumpet or other wind instrument, ringing a bell, change of place and travelling, etc. Although these recommendations show the importance attributed to movements in the prevention and cure of consumption, it is not a matter of indifference what kind of movements are prescribed in each case; because what is beneficial in one case, is not so in another. Medical gymnastics, based as they now are on physiological laws, do not

permit at the beginning of the treatment of this disease such movements as (although relieving momentarily, and expanding the chest) simultaneously increase the afflux of blood to the lungs and heart, but prescribe such movements as draw the blood from these organs, and improve the sanguification, nutrition, and peripheric circulation.

With the exception of spinal and other deformities, medical gymnastics have been most frequently applied in pulmonary consumption. Even in those cases where the assimilation and the nutrition are much below their normal condition, and the usual means are powerless to relieve, more was frequently done by the movements than could be reasonably expected. The movements are selected most judiciously, according to the complications and symptoms, and the various stages of the disease.

At the beginning of the treatment, passive rotation and pulling of the hands and feet, and half active movements (with P.R.) on the hands and forearms, feet, legs, and thighs, are used, in order to increase the arterial capillary circulation in the periphery; they act as a derivative from the lungs, and therefore soon relieve the patient. All stooping and inclined commencing positions must be avoided; the half-lying and, in general, those positions in which the patient feels most comfortable are selected, as, for instance, elbow support heave lean sitting position in the forearm movements, or leg lean half-lying position, for the movements of the lower extremities.

As soon as the chest is a little relieved, pressures on the veins of the head or of the abdomen are combined with the preceding half active movements; angle movements of the pelvis and, later, of the trunk, swinging of the arms and legs and chopping on the arms in speak or yard position, will be combined with the other passive movements; and some time later, when the chest is more free, such half active movements of the arms and trunk are used as expand the chest and increase the action of the muscles of the thorax; as, for instance, rack, arm extension (P.R. and G.R.), stride sitting trunk twisting (P.R.), trunk felling (P.R.), trunk raising

(G.R.), etc. The passive movements will be directed to the chest, as chest spanning, chest vibration, chest pulling, linear, longitudinal, and transversal back chopping, etc.

The following curative and derivative movements are, according to Dr. Melicher, recommended by Professor Branting :—

1. Half sitting, knee flexion.
2. High standing, leg pressure forwards.
3. Stride standing, double knee flexion.
4. Knee chine pressure.
5. Squat half lying, knee separation.
6. High sitting, leg down pressure.
7. High kneeling, trunk back pulling.

At the end of the treatment the patient is directed to keep it up by some suitable half active and active movements. According to my experience, the expansion of the chest in consumptive patients progresses very slowly ; while it is surprising how quickly the chest of persons affected with spinal curvatures expands. Consumptive persons are to continue the treatment as long as improvement is manifest; and although this is a rule which applies to all diseases, it is still more important in these cases, because the want of the half active and passive movements cannot be substituted by any of the suitable active movements, so long as the patient is not sufficiently recovered, and his sanguification and nutrition not quite so good as in the normal state. Consumptive persons should continue the gymnastic treatment during one or two months for several years. The movements are more important for the prevention of the disease in such youths as have a phthisical constitution, which is either about developing itself, or already developed; and further in those cases where the development of the organs of the chest is retarded, compared with the rest of the body, or where the natural development and expansion of the thorax is prevented in consequence of a previous pneumonia, pleuritis, or of a stooping and inclined position necessarily connected with certain trades and occupations.

Consumption (Neumann).

Mr. L., thirty-eight years old, suffered for six or eight months from considerable cough, yellow expectoration, passing stitches in the chest, emaciation; a particularly troublesome pain in the larynx, frequently causing cough, which was accompanied by a hoarse and almost inaudible voice; much perspiration during the night; digestion good, and bowels regular; the anterior part of the throat, thorax, and abdomen contracted and shortened.

The following five prescriptions restored him in the course of five months.

First prescription.

1. Air standing, leg twisting (P.R.)
2. Elbow support half lying, double forearm extension (P.R.)
3. High sitting, leg extension (P.R.)
4. Lean standing, arm jerk vibration.
5. Half lying, leg outwards twisting (P.R.)
6. Inclined sitting, linear back stroking.
7. Half lying, foot rotation.
8. High opposite standing, leg forwards pressure (P.R.)
9. Half lying, loin lifting and stroking.
10. Half lying, pressure on the nervus vagus (after a strong inspiration).

After a fortnight, the patient felt his chest relieved, and the following prescription was used.

Second prescription.

1. Stride half lying, double leg adduction (P.R.)
2. Opposite standing, double knee flexion (P.R.) and knee extension (G.R.), with stomach and loin pressure.
3. Right squat sitting, knee down pressure (P.R.)
4. Heave grasp standing, double chest arch clapping.
5. Squat half lying, solar plexus pressure.
6. High sitting, leg division.
7. Rack stride inclined sitting, double arm extension (G.R.)

8. High opposite standing, foot flexion (P.R.) and foot extension (P.R.)

9. Half lying, larynx vibration and stroking.

10. Half lying leg twisting, with stomach loin pressure.

During three weeks the second prescription was continued, when the pain and irritation in the larynx ceased.

Third prescription.

1. Squat half lying, knee division.
2. Stretch stride sitting, upper and forearm flexion (G.R.)
3. Span oblique standing, chest arch clapping.
4. Kick half lying, leg down pressure (P.R.)
5. Chine lean fall standing, larynx vibration and stroking.
6. Span squat standing, knee down pressure (P.R.)
7. High long sitting, trunk back flexion (G.R.)
8. Think chine lean stride standing, trunk back pulling (P.R.)
9. Half rest ledge standing, trunk plain twisting.
10. Stretch stride sitting, chest spanning, with knee back pressure.

A month after these movements had been used the patient improved, and his chest was so much expanded that he could scarcely button his coat.

Fourth prescription.

1. Instep support curtsey standing, trunk raising (G.R.)
2. Step standing, knee flexion (P.R.) and extension (P.R.)
3. Stretch curtsey standing, knee extension (G.R.), with stomach loin and double hand pressure.
4. Saddle squat sitting, knee down pressure (P.R.)
5. Stretch stride kneeling, chest lifting.
6. Stride sitting, trunk contortion.
7. Span standing, chest double arch chopping.
8. Swim hanging, larynx vibration.
9. Span grasp standing, hip backwards twisting (P.R.)
10. Span stretch standing, chest spanning.

A month later the following prescription was used.

Fifth prescription.

1. Trunk lying, double leg down pressure (P.R.)
2. Stem lying, holding.
3. Stretch stride high sitting, trunk back flexion (G.R.), with stomach loin pressure.
4. Span speak grasp reclined kick standing, leg down pressure (P.R.) (right span left speak left kick).
5. Swim hanging, larynx vibration and stroking.
6. Span speak grasp standing, hip forwards twisting (G.R.) (right span left speak, left hip).
7. Tumble standing, chest double arch chopping.
8. Stretch stride sitting, chest lift vibration.
9. Heave standing, chest spanning.
10. Half rest twist, high sitting, trunk back pulling (G.R.) (right rest right twist).

This prescription was used for some time, when the patient's health was perfectly restored, and the thorax so much expanded that his coat could not be buttoned at all.

Consumption (Neumann).

A girl, whose parents and three sisters died of consumption, showed the first symptoms of that complaint. She began the movements, which made such a change in the course of six months, that she has been for the last two years in the most blooming health.

Laryngeal phthisis.

Miss B., nineteen years old, fair, tall, phthisical constitution (her mother suffered for years from uterine disease), long throat, very prominent larynx, cylindrical thorax, suffered for several months from cough and laryngeal irritation, and oppression of the chest; had no power of keeping the body upright; hands and feet are cold, and a general languor prevalent; menstruation scanty. She was under my treatment

from the 15th of December, 1851, to the 6th of February, 1852. Her cough and languor disappeared, the chest increased in its transversal circumference one inch and a half, and the circulation was considerably improved. In the course of this year (1855) her mother called on my friend Dr. Chapman, and told him that her daughter is still well.

The movements were, at the beginning, partly arterial derivative on the feet, legs, thighs, and abdomen, partly absorbent on the larynx and chest—as larynx and chest vibration, larynx stroking, chest chopping; later, half active movements (with P.R. and G.R.) were made on the arms, to increase the lateral diameter of the chest, and on the trunk, to increase the muscular action round the spine.

Tubercles of the lungs and blood-spitting (Weber).

Mr. G. M., twenty-two years old, fair, scrofulous, and weak from childhood, came under treatment on the 31st August, 1852, but it was at first frequently interrupted, in consequence of his hæmoptysis and other slight indispositions. He visited the Institution only four times a week. The first symptoms of tuberculosis appeared in August, 1851, under the form of violent blood-spitting and cough, with copious expectoration. He was sent at that time by his physician to Ems, in such a state that it was doubted whether he would ever come back alive. Although the pulmonary disease remained unchanged, he nevertheless returned a little stronger. He then fell back into his old state, but with emaciation, hectic fever, frequent more or less copious blood-spitting, cough with copious and purulent expectoration. In this condition he again made use of the waters at Ems in the summer of 1852, and was treated medicinally, without any improvement.

The weight of the patient was at the beginning of the treatment 111 pounds, the 22nd December of the same year (fourteen weeks later) 114, and the 8th April, 1853, 122 pounds (*Hessian measure*). His height is 170 centimetres. The thorax, which is formed normally, is tolerably well raised during in-

spiration, more on the left than on the right side; the circumference over the nipples during expiration 75½ centimetres, and during a deep inspiration 79 centimetres. Percussion on the right anterior side, upwards above and a little under the clavicle, showed a tympanitic sound, rather dull downwards to the lower edges of the lung. In the right axillary region and round the right clavicle the sound is clearer, and tympanitic; on the right posterior surface the sound is dull, but clearer towards the lower part; left upwards in front, in the clavicular region, the sound is tympanitic; on the rest of the anterior and lateral parts the sound is clearer and fuller; on the left upper posterior portion dull, but clearer lower down. On the whole anterior and posterior surface of the right side the breathing was distinctly bronchial, and bronchophony, with metallic resonance and sound of the broken hamper, in the upper region of the back, where the bronchial respiration is most distinct; in the right armpit the respiration is vesicular, and bronchophony is audible while speaking. On the left side at the top, in front as well as at the back, bronchial respiration and bronchophony; on the rest of the left lung vesicular respiration, which is particularly strong on the anterior surface. The patient is (after eight months' treatment) in every respect so much improved that nobody considers him ill; he looks very well, is stout and strong, has scarcely any cough or expectoration, and the physical examination shows considerable improvement.

The following five prescriptions were used.

First prescription.

1. Stride standing, head back flexion and holding.
2. High sitting, larynx vibration and stroking.
3. Stretch standing curtseying, and double thigh and leg extension (G.R.), with double hand pressure.
4. Stretch sitting, chest spanning (P.R.)
5. High short sitting, double leg separation (G.R.)
6. Yard grasp standing, longitudinal downwards stroking on the back and chest.

7. Stride inclined thigh lean standing, trunk back pulling (P.R.), with double armpit pulling.

8. High squat kick standing, thigh and leg extension and holding.

9. Half lying, loin lift stroking and vibration.

10. Heave grasp inclined standing, back upwards chopping and upwards stroking.

Second prescription.

1. Span reclined kick standing, leg down pressure (P.R.)

2. High sitting, head back flexion and posture.

3. High sitting, larynx vibration and stroking.

4. Close standing, double foot extension and posture.

5. Stretch sitting, chest spanning and double upper and forearm flexion (P.R.)

6. Squat half lying, leg extension (P.R.) and flexion (G.R.)

7. Yard stride thigh opposite fall standing, double arm vibration.

8. High short stride sitting, double leg adduction (P.R.)

9. Yard grasp standing, longitudinal chest downwards chopping and stroking.

10. Same as 8.

11. Half lying, loin lift stroking and vibration.

12. Heave grasp standing, longitudinal back downwards clapping and stroking.

Third prescription.

1. Double elbow support sitting, double forearm extension and flexion (P.R.)

2. Squat long sitting, double leg extension (P.R.) and flexion (G.R.)

3. High sitting, head back flexion and posture.

4. Half lying, vagus nerve pressure.

5. Stride half lying, double leg adduction (P.R.)

6. Inclined sitting, longitudinal back down chopping and stroking.

7. Heave grasp standing, chest spanning (P.R.)

8. Rack grasp crouch standing, double thigh and leg flexion and extension (G.R.), with double armpit pressure.

9. Heave grasp standing, chest double arch clapping and stroking.

10. High squat kick standing, thigh and leg extension and posture.

11. Rack stride inclined sitting, double arm extension (G.R.)

Fourth prescription.

1. Stretch thigh lean stride standing, double upper and forearm flexion (P.R.)

2. Short thigh stride sitting, double leg down pressure (P.R.)

3. Rest stride thigh opposite, twist deep crooked standing, trunk forwards twisting (G.R.)

4. Peg grasp inclined standing, back longitudinal upwards chopping and stroking.

5. Step standing, thigh and leg flexion and extension (G.R.), with double shoulder pressure.

6. Inclined stride kneeling, trunk back pulling (P.R.), with knee chine stroking.

7. Span standing, chest arch chopping.

8. Thigh lean stride fall standing, larynx vibration and stroking.

9. Span stretch standing, chest spanning (P.R.)

10. Half stretch standing, double thigh and leg flexion and extension (G.R.), with hand and shoulder pressure.

11. Peg grasp stride standing, double thigh and leg flexion and extension, with stomach and chine pressure.

Fifth prescription.

1. Span stretch standing, upper and forearm flexion (G.R.)

2. High peg grasp swing standing, leg forwards pressure (P.R.)

3. Span stretch standing, trunk forwards twisting (P.R.) and backwards twisting (G.R.)

4. Squat half lying, double knee separation (G.R.)

5. Yard thigh lean stride standing, double arm sideways downwards guiding (P.R.)

6. Inclined stride thigh lean standing, back pulling (P.R.)

7. Stretch stride thigh lean standing, trunk alternate forwards twisting (G.R.), with double hand and double shoulder pressure.

8. Peg grasp inclined standing, back chest sideways chopping and stroking.

9. Stride sitting, head back flexion (G.R.), with neck chopping and head forwards flexion (G.R.), with throat chopping.

10. Stretch stride kneeling, double upper and forearm flexion (G.R.)

Tubercles of the left lung (Neumann).

A girl of eight years, very weakly constituted, suffered from tuberculosis of the apex of the left lung.

1. Rack high stride sitting, double arm alternate extension (P.R. and G.R.)

2. Span heave grasp standing, knee alternate raising (G.R. and P.R.) (right span left heave grasp left knee)

3. Half stretch stride standing, alternate trunk sideways flexion (G.R.), with hand pressure (right stretch right sideways flexion and left sideways flexion).

4. Forwards lying, double leg alternate flexion (P.R.) and extension (P.R.)

5. Heave grasp standing, double arch clapping and stroking on the chest.

6. Rest walk fall (inclined) standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)

7. Stretch foot supporting fall (inclined) standing, alternate trunk forwards inclination (G.R.), and backwards flexion (G.R.), with double hand and double foot pressure.

8. Span half toe sitting, alternate thigh extension (G.R.) and flexion (P.R.)

9. Heave grasp standing, chest alternate spanning (P.R. and G.R.)

10. Stem wave lying, alternate leg inwards pressure (P.R. and G.R.)

Asthma (*Emphysema pulmonum*),

With chest contraction on the left side, and relaxation on the right, and venous capillary hyperæmia of the mucous membranes of the lungs and stomach (Neumann).

Mr. B., forty years old, has used for six years many mineral waters and medicines, without any relief of his chest and abdominal complaints, which were frequently accompanied by blood-spitting and blood-vomiting. On the 15th February, 1852, he came under treatment, although with reluctance, and much against the wish of his wife. The symptoms were expectoration and vomiting of blood, occurring alternately, and either red or darker coloured blood was thrown up as often as he was obliged to make any increased violent mental or bodily exertion; the right half of the thorax was considerably larger and more prominent than the left, especially on its anterior side. Auscultation and percussion showed evidently an emphysema of the right lung, and the left in a tolerable good condition. Great loss of bodily strength was accompanied by considerable emaciation, and relaxation of the muscles; the appetite indifferent, and the bowels very torpid. The patient was under treatment till the middle of October of the same year, and so far recovered his health that the expectoration of blood has ceased, and both sides on the thorax became uniform and perfectly normal, and he can, while shooting, climb hills without difficulty.

First prescription.

1. Stride lying, double leg adduction (G.R.)
2. Span squat reclined standing, knee down pressure (P.R.)
3. Half lying, stride rotation.
4. Horse transversal sitting, leg extension (G.R.) and flexion (P.R.)
5. Left span reclined standing, concentric abdominal stroking.
6. Left stretch high stride sitting, trunk back pulling (P.R.), with left arm and head pressure.

7. Opposite inclined reclined standing, chine stroking.

8. Left span standing, hip forwards pulling, with vibration.

9. High peg grasp standing, right leg raising (P.R.)

10. High peg grasp standing, foot flexion (G.R.) and extension (P.R.)

Second prescription.

1. Squat half lying, knee division.

2. High peg grasp left wave standing, leg down pressure (P.R.) and right leg sideways raising (G R.)

3. Half lying, double leg separation (P.R.)

4. High peg grasp standing, right leg forwards pulling (G.R.) and leg left back pulling (P.R.)

5. Left span right speak grasp reclined standing, right knee raising (G.R.) and left knee down pressure (P.R.)

6. Left rest left step standing, trunk back pulling (P.R.)

7. Left span right speak grasp standing, hip forwards pulling (P.R.), with vibration.

8. Opposite inclined reclined standing, chine stroking.

9. Left span right heave standing, right chest clapping (slightly).

10. Half lying, right leg raising (G.R.) and left leg down pressure (P.R.)

Third prescription.

1. Left span right speak grasp kick standing, leg separation (G.R.)

2. Half lying, leg twisting outwards (G.R.)

3. Stretch stride sitting, right upper and forearm flexion (G.R.)

4. Squat half lying, knee separation.

5. Left span right heave grasp standing, right chest chopping.

6. Left heave right speak grasp standing, chest spanning (P.R.)

7. Forwards air lying, leg extension (P.R.) and flexion (G.R.)

8. Left stretch stride kneeling, back felling (P.R.), with chine pressure.

9. Left span trunk lying, left leg down pressure (P.R.)

10. Opposite standing, knee flexion (P.R.) and extension (G.R.), with stomach loin pressure.

Fourth prescription.

1. High opposite standing, left leg back pnlling (P.R.)
2. Left speak stride sitting, left arm sideways and upwards guiding (P.R.)
3. Left stretch leg forwards lying, holding.
4. Left stretch ledge standing, trunk alternate twisting (G.R.)
5. Left span trunk lying, double leg down pressure (P.R.)
6. Left span trunk lying, pelvis rotation.
7. Left span half lying, right leg raising (G.R.) and left leg down pressure (P.R.)
8. Left stretch half lying, loin lift stroking, with vibration.

Fifth prescription.

1. Left stretch left walk standing, head back flexion (G.R.), with left arm pulling.
2. Left rack jump sitting, left arm extension (G.R.)
3. Left span right speak grasp standing, left hip guiding (G.R.)
4 Right speak grasp left yard standing, chest spanning.
5. Left span right angle high standing, right leg swing raising (G.R.) and left leg sideways down pressure (P.R.)
6. Right angle stem lying, holding.
7. Left stretch foot opposite falling, upwards pressure (P.R.)
8. Left stretch stride kneeling, trunk alternate twisting (G.R.), with knee chine pressure.
9. Left stretch standing, double knee curtseying and extension, with stomach loin pressure.
10. Right angular span hanging, double leg separation (G.R.)

Sixth prescription.

1. Left stretch right angle long stride sitting, right oblique back flexion (G.R.)
2. Left stretch leg lying, holding.

3. Left stretch deep crooked standing, trunk alternate twisting (G.R.)

4. Stretch lying, right upper and forearm flexion (G.R.), with right leg curtseying (G.R.) and left arm and left leg pulling.

5. Left stretch trunk lying, double leg down pressure (P.R.), with left arm pulling.

6. Left rest angle right angle high stride sitting, trunk rotation.

7. Left stretch leg lying, trunk alternate twisting (G.R.)

8. Left stretch right rack left side lying, right side chest concentric chopping and stroking.

9. Left stretch lying, trunk angle movement.

10. Left stretch left oblique high stride sitting, trunk left sideways raising (P.R.) and trunk right sideways flexion (G.R.)

Seventh prescription.

1. Right yard thigh opposite deep crooked standing, trunk raising (G.R.)

2. Stretch high stride sitting, trunk back flexion (G.R.)

3. Rest stride kneeling, trunk right backwards twisting (G.R.), with knee chine pressure.

4. Stretch lying, double leg separation (G.R.), with double arm pulling.

5. Span reclined standing, hip guiding (G.R.)

6. Stretch lying, loin lift stroking and vibration, with double arm and double leg pulling.

7. Span standing, arch chopping and stroking of the right side of the chest.

8. High opposite standing, leg forwards pulling (G.R.)

9. Stretch lying, abdomen chopping and stroking, with double arm pulling.

10. Left stretch right angle right half long sitting, back flexion (G.R.)

Eighth prescription.

1. Left stretch right angle half lying, double leg separation (G.R.)

2. Left stretch right angle right heel support crooked standing, trunk raising (G.R.), with right knee pressure.

3. Left span right speak grasp kick standing, leg separation (G.R.)

4. Right stretch left wing stride kneeling, right upper and forearm flexion (G.R.)

5. Inclined sitting, trunk plain twisting.

6. Opposite inclined standing, back longitudinal chopping and stroking.

7. High opposite standing, leg forwards pulling (G.R.)

8. Left span right speak grasp wave standing, leg down pressure (G.R.)

9. Left stretch right angle long stride sitting, back flexion (G.R.)

10. Left stretch right angle stride high sitting, trunk sideways flexion (G.R.), with hand pressure.

Ninth prescription.

1. Half lying, foot rotation (P.R.)

2. High stride sitting, trunk sideways flexion (G.R.)

3. Span standing, knee raising (G.R.)

4. Long fall sitting, trunk forwards flexion (G.R.)

5. High opposite standing, foot flexion and extension (P.R.)

6. Inclined sitting, trunk plain twisting.

7. Heave standing, double chest arch clapping and stroking.

8. High short sitting, flexion and extension (P.R.)

9. Thigh opposite deep crooked standing, trunk back raising (G.R.)

10. Half lying, larynx chopping, vibration, and stroking.

Emphysema of both lungs (Neumann),

Without cough, and slight dilatation of the heart. Patient thirty years old.

First prescription.

1. Half stretch half lying, upper and forearm flexion (G.R.)
2. Curtsey half lying, knee adduction (G.R.)
3. Half lying, foot rotation (passive) and foot flexion (G.R.)
4. Half stretch thigh opposite standing, trunk forwards flexion (G.R.)
5. High opposite standing, leg forwards pulling (G.R.)
6. Inclined stretched kneeling, trunk raising (passive), with chine pressure and chest vibration.
7. Half lying, stride rotation.
8. High stride sitting, trunk sideways flexion (G.R.)
9. Forwards rocking, leg sideways raising (G.R.)
10. Half rest oblique sitting, trunk forwards twisting (G.R.) (right rest left oblique).
11. Half lying, loin lift stroking and vibration.

Emphysema, with constipation (Neumann).

1. Yard deep crooked standing, arm flexion (P.R.)
2. Stride fall chine lean standing, trunk screw twisting.
3. Inclined reclined opposite standing, chine stroking.
4. Span standing, forwards pulling (P.R.), with loin vibration.
5. Span speak standing, chest sideways chopping,
6. Opposite standing, transversal back longitudinal chopping.
7. Span standing, concentric abdominal stroking.
8. Trunk lying, pelvis rotation.
9. Stretch fall stride sitting, upper and forearm flexion (G.R.), with knee chine stroking.
10. Half lying, leg outwards twisting (G.R.)

Emphysema, with copious expectoration (Neumann).
Patient eighteen years old.

1. Stretch opposite standing, forwards twisting (G.R.)
2. Stem lying, leg separation (G.R.)
3. Think inclined sitting, trunk back flexion (G.R.)
4. Half rest deep crooked standing, chest side clapping.
5. Tumble standing, leg raising (G.R.)
6. Inclined sitting, trunk raising (active), with back longitudinal stroking.
7. Span leg lying, loin lift stroking and vibration.
8. Relaxed sitting, hip vibration.
9. Half stretch jump sitting, trunk sideways flexion (G.R.) (right stretch right jump right side).
10. Lean standing, arm vibration.

Emphysema of the right lung (Neumann).

A patient, forty years old, suffered in such a degree that the right half of the chest projected more than an inch.

1. Left span right speak grasp kick standing, leg separation (G.R.)
2. Half lying, leg outwards twisting (G.R.)
3. Stretch stride sitting, right upper and forearm flexion (G.R.)
4. Swim hanging, leg separation (G.R.)
5. Left span right heave standing, right chest chopping.
6. Left heave right speak grasp standing, chest spanning (P.R.)
7. Forwards air lying, leg extension (G.R.)
8. Left stretch stride kneeling, back felling (P.R.), with chine pressure.
9. Left span trunk lying, left leg down pressure (G.R.)
10. Opposite standing, knee flexion (active) and knee extension (G.R.), with stomach and loin pressure.

CHRONIC CATARRH (Neumann).

Miss H., eighteen years old, uncommonly stout, suffers from chronic catarrh, lateral curvature of the spine to right, and cold feet.

1. High peg grasp kick (swing) standing, leg alternate back pulling (P R.) and forwards pulling (P.R.)

2. Left stretch right angle right oblique right walk left hip standing, alternate trunk left sideways flexion (G.R.) and left sideways pulling (P.R.)

3. Left span right speak grasp wave standing, leg alternate sideways and downwards pressure (P.R.) and sideways raising (P.R.)

4. High grasp standing, chest spanning (P.R. and G.R.)

5. Stride short sitting, double leg adduction (P.R) and separation (P.R.)

6. Left stretch right yard stride kneeling, alternate left sideways flexion (G.R.) and left sideways pulling (P.R.), with double hand pulling and double leg pressure.

7. Star forwards leg lying, alternate trunk down pressure (P.R. and G.R.)

8. Left stretch right yard left twist ledge standing, alternate trunk forwards twisting (G.R. and P.R.)

9. Half stretch half lying, alternate upper and forearm flexion (G.R.) and extension (G.R.), with throat chopping (right stretch left side of the throat chopping).

10. Left stretch left twist stride leg lying, holding.

ATROPHY OF THE HEART (Branting)

Has been treated successfully and repeatedly in the Royal Gymnastic Central Institute at Stockholm. The following is an instance of the treatment of this disease.

Mr. E. H., of Frankfort on the Maine, seventeen years old, grew very fast after his twelfth year, and a slight stitch-like pain in the heart was observed, especially during exertion with the arms. A perfectly erect position produced difficulty of breathing, and the body was therefore generally either in

inclined or crooked position. In the middle of the anterior side of the thorax there was a depression from one to one and a half inch deep. Spasms of the legs were frequent. The treatment consisted in the following movements, prescribed the 3rd of July, 1849.

1. Opposite inclined standing, back divergent chopping.
2. Short sitting, leg flexion (P.R.)
3. Stride inclined kneeling, trunk back pulling (P.R.), with knee chine pressure.
4. Right stretch right twist stride sitting, right arm rotation.
5. Stretch inclined stride sitting, double arm sideways downwards guiding (P.R.)
6. Kneeling, back felling (P.R.)
7. Inclined thigh opposite standing, shoulder transversal chopping.
8. Half stretch high stride oblique sitting, trunk sideways pulling (P.R.) (right stretch left oblique right sideways pulling).
9. High peg grasp stride standing, leg stroking with the stroking-rod, from above downwards.
10. Stretch stride sitting, chest spanning (P.R.)

The 24th of July the following movement was inserted between Nos. 7 and 8.

Stretch stride inclined sitting, double arm sideways downwards guiding (P.R.)

And on the 30th July, instead of No. 9,

High peg grasp swing standing, leg forwards pressure (P.R.)

The 23rd of August, after No. 6,

Half stretch leg twist lying, trunk forwards twisting (G.R.) (right stretch right twist right forwards twisting).

Towards the end of the third month the patient left, perfectly well.

DISEASE OF THE HEART (Neumann, see p. 59).

Miss ——, twenty-two years old, suffering from insuffi-

ciency of the valves of the aorta, emphysema of the lungs, chronic bronchial catarrh, bad circulation in hands and feet.

1. High peg grasp air standing, leg alternate extension (P.R.) and flexion (P.R.)

2. Stretch yard twist stride standing, alternate trunk forwards twisting (G.R.) and back twisting (G.R.), with double hand pressure (right stretch left yard left twist).

3. Stride half lying, double leg alternate adduction (P.R. and G.R.)

4. Rest yard walk oblique hip lean standing, alternate trunk sideways flexion (G.R.) and sideways pulling (P.R.), with hand elbow pressure (right rest left yard right walk right hip lean left oblique right sideways flexion, and right sideways pulling).

5. Double elbow support sitting, double forearm alternate flexion (P.R.) and extension (P.R.)

6. Half stretch step stride fall (inclined) standing, alternate trunk forwards flexion (G.R.) and back flexion (G.R.), with hand elbow and head pressure (right stretch left step).

7. Half lying, leg alternate outwards twisting (G.R. and P.R.)

8. Half stretch high stride oblique sitting, alternate trunk sideways flexion (G.R.) and sideways pulling (P.R.), with upwards clapping on the left half of the body (right stretch right oblique left sideways flexion and left sideways pulling, with clapping on the left side of the back and left stretch left oblique right sideways flexion and right sideways pulling, with clapping on the left side of the chest).

9. Span stride hanging, double leg alternate adduction (P.R.) and separation (P.R.)

10. Half stretch stride leg twist lying, holding (right stretch right twist).

TUBERCLES OF THE LEFT LUNG, ANASARCA, AND ULCERS ON BOTH LEGS (Neumann).

An officer, fifty years old, suffered during nine months from dropsy (anasarca), which was periodically more or less con-

siderable, but which was always worse after catching cold, so that he could not leave his bed. On the swollen legs, near the ankles, three ulcers formed and discharged much thin matter; a cough of several years' standing was aggravated, and the expectoration was very copious. In the cavities of the chest and abdomen the quantity of exudated liquid was small; the hydragogue medicines produced no relief, and the oppression of the chest increased. The treatment began the 16th of December, 1850, and was continued to the 1st of July, 1851, and, after an interval of five months, recommenced in December, 1851, and continued till April, 1852. He was almost completely restored, and became so strong that, although a slight cough and some expectoration were present, he was enabled to do his onerous duties even a year after leaving off the treatment.

The following six prescriptions were used.

First prescription.

1. High sitting, leg division.
2. Half stretch inclined thigh opposite standing, trunk back raising (G.R.) and back pulling (P.R.)
3. Half lying, leg vibration.
4. Ledge standing, alternate trunk twisting (G.R.)
5. Horse end stride sitting, leg forwards pulling (P.R.) and backwards pulling (G.R.)
6. Half stretch high stride sitting, trunk contortion.
7. Half lying, stride rotation.
8. Crooked standing, abdomen kneading.
9. High stride inclined sitting, trunk back pulling (P.R.)
10. Bound standing, trunk rotation.

Second prescription.

1. Yard sitting, leg separation (G.R.)
2. Think thigh opposite twist standing, trunk forwards flexion (G.R.)
3. Stride high sitting, trunk rotation, with stomach and loin pressure.
4. Trunk lying, double leg sideways pulling (P.R.)

5. Rest stride kneeling, trunk back pulling (P.R.)

6. Star foot opposite falling, trunk upwards pressure (P.R.)

7. Half lying, leg and arm vibration.

8. Half stretch high twist sitting, trunk oblique forwards flexion (G.R.)

9. Stretch standing, leg curtseying, with stomach and loin pressure (G.R.)

10. Inclined yard stomach opposite standing, trunk screw twisting.

Third prescription.

1. Rest deep crooked standing, trunk plain twisting.

2. Span reclined high standing, knee down pressure (P.R.)

3. Stretch stride fall sitting, double upper and forearm flexion (G.R.)

4. Half stretch high stride sitting, trunk sideways flexion (G.R.)

5. Free standing, head back flexion (G.R.)

6. Balance standing, leg vibration.

7. Think high stride inclined sitting, trunk back pulling (P.R.)

8. Stretch stride kneeling, trunk back pulling (P.R.), with knee chine stroking.

9. Squat half lying, knee division.

10. High opposite standing, leg back pulling (P.R.)

Fourth prescription.

1. Span step standing, knee down pressure (P.R.)

2. Long twist stretch sitting, trunk oblique back flexion (G.R.) (right stretch right twist).

3. Half yard stride stomach opposite deep crooked standing, trunk raising (G.R.)

4. Inclined half rest sitting, trunk plain twisting.

5. Rest stride kneeling, trunk screw twisting.

6. Trunk lying, pelvis rotation.

7. High opposite standing, leg forwards pulling (G.R.)

8. Instep support standing, trunk raising (G.R.)

9. Opposite inclined standing, trunk back longitudinal chopping and stroking.

Fifth prescription.

1. Span speak kick high standing, leg down pressure (P.R.) (right span left speak right kick).

2. Half yard deep crooked standing, arm flexion (P.R.)

3. Span standing, trunk forwards pulling (P.R.), with loin vibration.

4. Leg half rest lying, trunk plain twisting.

5. Half lying, abdomen chopping and stroking.

6. Half stem leg lying, leg inwards pressure (P.R.)

7. Half stretch twist deep crooked standing, loin chopping and stroking (right stretch right twist right loin).

8. Squat half lying, stomach plexus pressure and vibration.

9. Span grasp standing, double loin clapping and stroking.

10. Forwards leg lying, posture and vibration.

Sixth prescription.

1. Half stretch hip lean walk standing, trunk sideways pulling (P.R.) (right stretch left hip lean left walk left side pulling).

2. Stretch opposite standing, back twisting (P.R.), with shoulder and loin pressure.

3. Stretch fall stride sitting, trunk forwards pulling, with double arm pressure.

4. Half yard jump sitting, trunk back pulling (P.R.) (right jump right yard).

5. Half stretch stride kneeling, trunk backwards felling (P.R.)

6. Stride half lying, double leg adduction (P.R.)

7. Opposite inclined standing, transversal back longitudinal chopping and stroking.

8. Leg forwards lying, trunk down pressure (P.R.)

9. Fall stride high sitting, arm sideways upwards guiding (P.R.)

TUBERCLES, BLOOD-SPITTING, AND PILES (Melicher).

Mr. K., thirty years old, was affected from his seventh to his fifteenth year with scrofula. Ten years ago, symptoms of pulmonary tubercles and blood-spitting were relieved by medicines. Four years ago, the blood-spitting was so violent that his death was expected to happen very soon. He was again cured by medicines, and remained tolerably well till the beginning of September, 1852, although he suffered periodically from dyspepsia, headache, cough, and a peculiar expectoration, piles (hæmorrhoidal varices), and constipation, which were treated medicinally by Dr. Melicher. In September, 1852, he again lost blood from the lungs, and the paroxysms of hæmoptysis returned more frequently ; his right lung was affected, as proved by auscultation and percussion ; the expectoration was mucous, purulent, and mixed with blood ; and the patient suffered from oppression in the pit of the stomach, from flatulency and constipation ; so that Dr. Melicher, finding medicines useless, prescribed on the 5th of December the following movements :—

1. Stretch lean arch standing, back flexion, with neck and back pressure (G.R.)
2. Half sitting, knee flexion.
3. Inclined sitting, back stroking.
4. High stride sitting, double leg inwards pressure.
5. Kneeling, back felling.
6. Half lying, leg outwards twisting (P.R.)
7. Relaxed sitting, hip vibration.
8. High close sitting, double leg down pressure.
9. Standing, larynx vibration.
10. Span arch standing, double chest lateral chopping.

During the use of this prescription the coughing of blood ceased, as well as the purulent expectoration ; all morbid symptoms diminished, the patient felt relieved, was able to breathe freely, and was quite a new man.

NARROW CHEST.

In all cases of narrow contracted chest, with or without a conical, cylindrical, or flat and compressed thorax, which is frequently the first sign of a future pulmonary disease, the following movements will be useful, not only for expanding the chest, but also for improving the constitution.

1. Trunk twisting (P.R. and G.R.)
2. Trunk obliquely backwards pulling (P.R)
3. Trunk lateral pulling (P.R.)
4. Arm rotation (P.R. and G.R.)
5. Swinging, flying, and pumping of the arms.
6. The half active arm and forearm flexions and extensions in the various commencing positions of the arms.

NARROW CHEST, PREDISPOSITION TO DIARRHŒA, AND MUSCULAR WEAKNESS (Neumann).

1. High peg grasp kick standing, leg alternate back pulling (P.R.) and forwards pulling (G.R.)
2. Rest stretch hip lean walk oblique standing, alternate sideways flexion (G.R.) and sideways pulling (P.R.) (right rest left stretch right hip lean right walk left oblique right sideways flexion, and right sideways pulling).
3. Kick half lying, leg alternate down pressure (P.R.) and raising (G.R.), with abdomen upwards clapping.
4. Heave grasp standing, chest alternate spanning (G.R. and P.R.)
5. Forwards lying, double leg alternate flexion (G.R.) and extension (P.R.)
6. Heave grasp standing, head alternate forwards flexion (P.R.) and back flexion (G.R.)
7. Rack half lying, double arm alternate extension (G.R. and P.R.)
8. Half yard twist close thigh lean standing, alternate trunk forwards twisting (P.R,) and back twisting (G.R.) (right yard right twist).

9. Span defence standing, upper and forearm alternate extension (P.R.) and flexion (G.R.)

10. Half stretch twist stride leg lying, holding (right stretch right twist).

CHICKEN-BREAST,

Whether produced idiopathically by a deformity of the thorax, or in consequence of a disease of the respiratory and abdominal organs, will be considerably improved or cured by medical gymnastics, as the movements chosen, according to the cause and deformity, are used to improve the functions of the internal organs, and the enlargement of the thorax in a lateral direction.

Half active arm movements, as flexion, extension, and rotation, half active trunk flexions in all directions, trunk twisting, trunk rotation, passive swinging of the arms and flying, chest spanning, felling, chest vibration, holding in hanging positions, and many others, combined with arterial and venous derivative movements on the legs and feet, are amongst those which are most frequently used.

Master L., four years old, fair, large head, intelligent face, pale, very emaciated, of a scrofulous family (his brother being affected with deafness in a slight degree, one sister with spinal deformity, another sister with complete deafness), was affected with chicken-breast from his third year; his health is very delicate, the throat very thin, the head inclined forwards, and the stomach protruding, in consequence of weakness in the lower part of the spine, which bends slightly to the right; his limbs are weak, and the feet cold. He began the treatment August 20, 1852; and in the course of two months the deformity of the chest was almost cured. The following movements were used :—

1. Half lying, foot rotation (passive).

2. Half lying, foot flexion and extension (G.R.)

3. Climbing backwards on the vertical mast, and deep breathing in stretch grasp stride peg standing position. The

climbing is made in four motions, after which the breathing follows.

4. Right yard high stride sitting, trunk flexion sideways (G.R.)

5. Lying (with arms close to the body, and legs well stretched), head turning (G.R. and P.R.)

6. Rack lying, arm extension (G.R.) and flexion (P.R.)

7. Inclined thigh opposite standing, trunk raising (G.R.)

8. Yard grasp stride standing, chest arch chopping.

9. Lying, active arm extension upwards, outwards, and downwards.

10. Repetition of No. 3.

11. Spasm grasp standing, transversal back and loin stroking.

Trunk twisting (P.R.), head sideways flexion (G.R.), and swim hanging, arm flexion (active) and extension (G.R.), were in the second prescription partly substituted and added to the previous movements.

LIVER COMPLAINT, CONSTIPATION, AND PULMONARY TUBERCLES (Weber).

A patient, forty years old, was affected for a long time with pulmonary tubercles, and frequent and copious blood-spitting; his bowels did not act regularly for many years, although his appetite remained unimpaired. During the last nine months, periodical vomiting, with simultaneous intumescence, flatulency, and swelling of the abdomen, occurred frequently, and the patient got more and more emaciated. The liver was enormously enlarged, so that it was almost double its natural size. The patient, having been under many different treatments without any result, was in bad spirits, and had an antipathy to all medicines. As a trial, and in order better to observe his state, I recommended some gentle active movements, combined with half active and passive ones. Amongst these were—

1. Back chopping, arm sawing, with stroking.

2. Short sitting, leg separation (G.R.)

3. Half lying, stride rotation.
4. Stomach and abdomen fulling.
5. Toe sitting, double leg extension (G.R.)
6. Stomach and chine pressure.
7. Span standing, hip forwards pulling (P.R.)
8. Half lying, leg flexion and extension.
9. Inclined stride thigh lean standing, trunk backwards pulling (P.R.)
10. Half rest twist leg lying, trunk forwards twisting, etc. etc.

The patient, although scarcely able to go through his official duties, was prevented from visiting the Institution more than two or three times a week; on the other days he made at home the prescribed active movements, and soon began to improve. The vomiting ceased entirely after the first six weeks; the bowels acted more frequently and then regularly. The liver decreased in the course of four months to its normal size; the blood-spitting and cough were considerably diminished; the nutrition of the whole body improved. He increased in weight, and had a healthy and fresh appearance. At a later period, the blood-spitting and cough disappeared entirely.

SWELLING OF THE LIVER AND SPLEEN (*Physconia hepatis et lienis, cachexia splenica*—Melicher).

Caroline L., four years old, of Theben, in Hungary, suffered for a year from ague (intermittens tertiana), and neither purgatives, nor emetics, nor *China* effected a cure. She was sent to her grandmother at Vienna, and placed under Dr. Melicher's treatment, who changed the medicines; but the paroxysms still returned; the liver, spleen, and the abdomen were swollen, and felt hard; the child was cachectic and emaciated. All medicinal treatment was then left off, and washing of the lower extremities with cold water three times a day prescribed; and as the fever disappeared after the second paroxysm, she was placed under the movement cure.

The prescribed movements were made partly on the lower

extremities as derivative, and partly on the abdomen as absorbent; further, such half active and passive movements were used as tend to diminish the swelling of the liver and spleen, as, for instance, vibration, percussion, gentle infra-costal pressures (on both sides) in squat and in half lying positions; the treatment was finished a month later, with reproductive (new-formative) half active movements (P.R.) The respiratory, digestive, secretory, and excretory functions, and the circulation improved; the paleness of the face and the swelling of the abdominal organs disappeared. The child returned home healthy, and three months after was still well, having had no return of the ague.

CONSTIPATION.

Persons suffering from constipation, who were only temporarily improved by medicines or mineral waters, have been permanently cured, although their mode of life was not changed.

Such commencing positions by which the abdomen becomes tense, either in all its parts or only on some of them, are the best. The movements are arterial derivative, direct arterial, or neurotonic on the solar plexus, as, for instance:

Trunk screw twisting.
Trunk backwards pulling (P.R.)
Short sitting (on the horse), double leg back pulling (P.R.)
Knee down pressure (P.R.)
Star stem lying, hip down pressure.
Tumble standing, hip down pressure.
Pelvis rotation (P.R.)
Pressure on the plexus solaris.
Thigh rotation (P.R.) and extension (P.R.)
Tense abdomen stroking.
Tense abdomen vibration.
Stroking with a billiard ball.
Concentric stomach and abdomen fulling.
Fall standing, arm extension (P.R.)

Chine stroking and knee chine stroking.

Half active movements of the trunk and limbs.

Passive movements on the abdomen.

Back felling.

Back pulling (P.R.), in sitting, kneeling, and standing position.

Trunk forwards pulling.

Span standing, concentric abdomen stroking.

Opposite inclined reclined standing, concentric abdomen stroking.

Sitting, trunk sideways pulling.

Sitting, trunk rotation.

Sitting or standing, arm swinging.

Sitting or standing, arm rotation.

Leg back pulling (P.R.)

Leg down pressure (P.R.)

Standing, half lying, and lying leg extension.

Pressure on the sacral plexus.

Abdomen vibration in sitting, lying, and half lying positions (Melicher).

Instances of Prescriptions for Constipation (Neumann).

1.

1. Stride chine lean standing, trunk back pulling (P.R.)

2. High opposite stride standing, leg sideways and downwards pressure (P.R.)

3. Rack fall stride sitting, double arm extension (P.R.)

4. High opposite standing, leg backwards pulling (P.R.)

5. Span standing, concentric abdominal stroking.

6. Span standing, trunk forwards pulling (P.R.), with loin vibration.

7. Opposite inclined reclined standing, chine stroking.

8. Think long sitting, trunk back pulling (P.R.)

9. Stride kneeling, trunk plain twisting, with knee chine pressure.

10. High stride sitting, trunk rotation.

11. Opposite crooked standing, transversal back longitudinal chopping and stroking.

II.

1. Horse end sitting, double leg backwards pulling (P.R.)
2. Half yard twist stride high sitting, trunk back pulling (P.R.) (right yard left twist).
3. Ledge standing, trunk plain twisting.
4. Span trunk lying, double leg down pressure (P.R.)
5. Half lying, solar plexus pressure.
6. Span reclined leg forwards lying, concentric abdominal stroking.
7. Think twist stride high sitting, trunk oblique backwards pulling (P.R.)
8. Span lying, chine stroking.
9. Stretch stride kneeling, back felling (P.R.), with chine pressure.
10. Half rest oblique chine lean standing, trunk back pulling (P.R.), with head elbow pressure (right rest left oblique).

III.

1. Walk half lying, leg downwards pressure (P.R.)
2. Span squat reclining, knee downwards pressure (P.R.)
3. Step standing, trunk back pulling (P.R.)
4. Half yard jump sitting, trunk back pulling (P.R.) (right yard right jump.)
5. Stretch reclined chine lean stride standing, concentric abdominal stroking.
6. Opposite inclined standing, trunk forwards and backwards guiding (G.R.), with loin chine stomach and abdomen pressure.
7. Stretch stride sitting, upper and fore arm flexion (G.R.), with knee chine stroking.
8. Half lying, sacral plexus pressure.
9. Half lying, arch twisting.
10. Opposite stride kneeling, trunk felling and raising (G.R.), with chine pressure.
11. Fall stride chine lean standing, screw twisting.

Constipation, and pain above the right hip (Nitzsche).

Mr. P., forty-three years old, teacher at Chemnitz, suffered from a pain above the right hip, near the spine, which was increased by movement of the trunk, especially by trunk flexion to the left and by deep breathing; the bowels had not acted for several years without the use of aperients, taken every second or third day; the abdominal coverings, especially the tendinous tissues, with the peritoneum were contracted; the liver appeared hyperæmic. The patient had but a month to spare for his treatment, and I therefore endeavoured to combine such movements in the first prescription as would answer all indications. When the patient had used the movements a few days, the action of the bowels became regular, the pain in the right hip was diminished during the day, but returned in the evening, and still more in the morning, before using the movements of the first prescription, which was changed after a fortnight.

After the second prescription, the action of the bowels continued regular, the pain over the hip disappeared entirely, and, four months later, the patient wrote that he is still continuing to enjoy health, that his bowels act, and that his appetite is excellent.

First prescription, July 18, 1853.

1. High short sitting, double leg separation (P.R.)
2. Span standing, trunk forwards pulling (P.R.), with loin vibration.
3. Half long high sitting, trunk back pulling (P.R.)
4. Opposite inclined reclined standing, chine pressure and stroking.
5. High peg grasp standing, leg back pulling (P.R.)
6. Squat half lying, stomach plexus pressure and stroking.
7. Opposite inclined standing, back longitudinal chopping and stroking.
8. Stretch trunk lying, double leg down pressure (P.R.), with double arm pulling.
9. Half lying, stride rotation.

10. Span reclined standing, colon stroking, with pressure.

11. Rest high stride left twist sitting, right forwards twisting (P.R.)

12. Span standing, chest chopping and stroking.

Second prescription, August 1, 1853.

1. High peg grasp wave standing, leg sideways downwards pressure (P.R.)

2. Half long high sitting, trunk back pulling (P.R.)

3. Half stretch hip lean walk standing, trunk sideways pulling (P.R.) (right stretch left hip lean left walk left sideways pulling.)

4. Half speak half lying, arm sideways and upwards guiding (P.R.)

5. Opposite inclined reclined standing, chine stroking, with pressure.

6. Yard stride kneeling, back felling (P.R.)

7. Opposite inclined reclined standing, back longitudinal chopping and stroking.

8. High short sitting, double leg separation (P.R.)

9. Half lying, stride rotation.

10. Stretch trunk lying, double leg down pressure (P.R.) with double arm pulling.

11. Stretch standing, chest spanning (P.R.)

Diarrhœa.

The movements are direct-venous on the abdominal organs, derivative-venous on the lower extremities, neurotonic on the large plexus of the abdomen.

Instances.—Trunk angle movement.

Trunk forwards pulling (G.R.)

Trunk rotation (G.R.)

Hip twisting.

Screw twisting.

Inclined standing, double arm down pressure.

Point fulling on the stomach or abdomen.

Concentric fulling on the relaxed abdomen.

Stroking on the relaxed abdomen.

Vibration on the relaxed abdomen.

The passive movements are done in commencing positions, with relaxation of the abdominal organs.

Instances of Prescriptions for Diarrhœa chronica (Neumann).

I.

1. Half yard long sitting, trunk forwards flexion (G.R.)
2. Stride half lying, double leg adduction (G.R.)
3. Span reclined standing, knee raising (G.R.)
4. Inclined stride sitting, trunk alternate twisting (G.R.)
5. Lying, pelvis angle movement.
6. Half stretch walk hip lean standing, trunk sideways flexion (G.R.) (right stretch left walk left hip lean left flexion.)
7. Stretch deep crooked standing, upper and forearm flexion (G.R.)
8. Bound standing, trunk rotation (P.R.)
9. High stride inclined sitting, arch twisting.
10. Crooked standing, abdominal kneading.
11. Squat half lying, solar plexus pressure.

II.

1. Half lying, leg raising (G.R.)
2. Deep crooked standing, trunk plain twisting.
3. Jump twist sitting, trunk forwards flexion (G.R.)
4. Opposite inclined standing, circular chine knocking.
5. Half lying, serpentine abdominal stroking.
6. Yard inclined stride sitting, double arm flexion (G.R.)
7. Step standing, trunk forwards flexion (G.R.)
8. Heel twist supporting, trunk oblique forwards flexion (G.R.) (right heel left twist left oblique forwards flexion.)
9. Long sitting, trunk throw twisting.
10. Squat lying, abdominal clapping and stroking.

III.

1. Saddle sitting, knee raising (G.R.)

2. Leg forwards lying, trunk alternate twisting (G.R.)
3. Tumble standing, hip twisting (G.R.)
4. Half lying, stomach fulling.
5. Span standing, knee raising (G.R.), in different levels.
6. Stem lying, deep abdominal vibration.
7. Opposite inclined standing, transversal back longitudinal chopping and stroking.
8. Angular high stride sitting, trunk sideways flexion (G.R.)
9. Stretch half lying, leg curtseying (G.R.), with upper and forearm flexion (G.R.)
10. Twist forwards leg lying, trunk oblique down flexion (G.R.)
11. Half lying trunk angle movement, with abdomen pressure.

HYPOCHONDRIASIS AND BLOOD-SPITTING (Weber).

D. P., thirty-two years old, was pale and flabby, emaciated; mentally much depressed, and frequently very melancholy; the digestion bad; the abdomen full, but loose when touched; liver and spleen one-fourth or one-third increased in size. A sensation of pressure and oppression began in the pit of the stomach, and was accompanied by periodical but not copious blood-spitting.

During the gymnastic treatment, no medicines were prescribed, except the frequent drinking of water; and, besides the appropriate active moments, the following were used:—

1. Half lying, stride rotation, with thigh extension (P.R.)
2. Inclined stride sitting, screw twisting.
3. Span standing, hip forwards twisting (G.R.)
4. High long stride sitting, trunk rotation and back pulling (P.R.)
5. Opposite standing, double thigh and leg flexion and extension, with stomach and chine pressure.
6. Stretch sitting, chest spanning.
7. Inclined thigh lean stride standing, trunk back pulling (P.R.), etc.

The patient improved considerably, and in a short time he returned to his sedentary and mind-harassing official occupations, being much stronger and in the best spirits; he continued active movements without taking any medicine, and is, bodily and mentally, a real picture of health; all his previous morbid symptoms, the blood-spitting not excepted, disappeared, and he continues still well.

Hypochondriasis and constipation (Neumann).

Mr. W., fifty years old, suffered from inveterate hypochondriasis and constipation.

First prescription, June 8, 1854.

1. Kick half lying, leg alternate down pressure (P.R. and G.R.)
2. Rest stride thigh opposite fall (inclined) standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)
3. High peg grasp standing, knee alternate raising (G.R.) and down pressure (P.R.)
4. Half stretch high stride fall sitting, alternate trunk forwards flexion (G.R.) and back pulling (P.R.)
5. Stretch stride sitting, double upper and forearm alternate flexion (G.R.) and extension (P.R.), with knee back pressure.
6. High peg grasp swing standing, leg alternate forwards pulling (G.R.) and back pulling (P.R.)
7. Half yard twist stride thigh lean standing, trunk alternate forwards twisting (G.R. and P.R.) (right yard right twist).
8. Stride half lying, double leg alternate adduction (P.R.) and separation (P.R.)
9. Half yard inclined sitting, alternate back pulling (P.R.) and back flexion (G.R.)
10. Stretch fall long sitting, holding.

Second prescription, June 28, 1854.

1. Stretch yard stride fall thigh lean standing, alternate trunk forwards inclination (G.R.) and back pulling (P.R.)

2. Span yard grasp kick standing, leg alternate back pulling (G.R.) and forwards pulling (P.R.) (right span left yard grasp right kick.)

3. Rest yard twist high stride fall (inclined) sitting, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)

4. Stretch trunk lying, double leg alternate raising (G.R.) and downwards pressure (P.R.) with abdomen downwards clapping, and double hand to double foot pulling.

5. Span yard reclined twist stride standing, alternate trunk forwards twisting (G.R. and P.R.) (right span left yard left twist.)

6. Half lying, abdomen kneading and stroking downwards.

7. Yard stride kneeling, alternate back felling (P.R. and G.R.)

8. Half lying, stride rotation and thigh extension (P.R.)

9. Sideways lying, leg alternate sideways raising (G.R.) and downwards pressure (P.R.)

10. Forwards lying, double leg alternate flexion (G.R.) and extension (P.R.)

Hypochondriasis and constipation (Neumann).

Mr. L., forty years old, suffered from constipation, cold feet, constant catarrh of the mucous membranes of the nose, and hypochondriacal humour.

1. High peg grasp swing standing, leg alternate trunk forwards pulling (G.R.) and back pulling (P.R.)

2. Sideways wave lying, alternate leg sideways down pressure (P.R.) and sideways leg raising (G.R.)

3. Half stretch half lying, abdomen kneading downwards and stroking downwards.

4. Rest oblique high stride sitting, alternate sideways pulling (P.R.), with double elbow pressure (right oblique left side pulling and right side pulling).

5. Half yard stride thigh opposite (fall) inclined, standing, alternate trunk back pulling (P.R.) and forwards pressure (P.R.)

6. Stretch trunk lying, alternate double leg down pressure (P.R. and G.R.), with two hand pulling.

7. Half speak stride thigh lean standing, arm alternate sideways and upwards guiding (G.R.) and sideways downwards guiding (G.R.), with chopping on the nose and forehead.

8. Star high stride fall sitting, alternate trunk forwards inclination (G.R.) and back pulling (P.R.), with double hand pressure.

9. Half lying, alternate leg outwards twisting (P.R. and G.R.)

10. Half lying, alternate leg flexion and extension (P.R.)

APOPLEXY AND ITS CONSEQUENCES.

The arterial-derivative and venous-derivative movements on the hands and forearms, on the feet, legs, thighs, and pelvis, and the passive movements on these parts while in a state of tension, form the essential part of the prophylactic treatment, assisted by all the necessary dietetic means. Also the consequences of an apoplectic fit can be removed by movements, as seen by the following two cases mentioned by Weber.

First Case.

A gentleman, sixty-five years old, after an apoplectic fit could neither speak distinctly nor sign his name in a legible form; when walking he wanted assistance, as his right leg did not support him, and was only dragged after the other. A medicinal treatment during several months improved but slightly his right arm and speech; but a medico-gymnastic treatment, begun a year later, restored him the power of writing as much and as uninterruptedly as his official duties demanded. By degrees he was also enabled to speak clearly and fluently.

Second Case.

A lady, forty years old, affected by a cerebral apoplectic fit in September 1852, was almost entirely paralysed on the right side

(arm and leg), and lost her speech entirely. The intellectual functions were almost completely prostrated; she was exceedingly childish, and had only a partial recollection of what had previously happened. Although she could before the apoplectic fit write well and beautifully, she could not afterwards, with the exception of the first letter of her son's Christian name, write from memory a single letter, even though it was repeatedly pronounced. She remained till the 17th of February, 1854, in this state, notwithstanding the frequent use of internal medicines and setons, etc., when the treatment by movements began, which was continued during three months and a half. In this short time she improved so far that she was able to write whole phrases which were dictated to her, without any one guiding her hand; she lost her childish manners, and took long walks out of town without being accompanied; while before the gymnastic treatment she could not make a step in the room without being assisted.

PARALYSIS.

The majority of patients affected with chronic paralysis have been hitherto almost entirely neglected, and, with the exception of electricity or galvanism, and some mineral waters and *Strychnine* and *Nux Vomica*, scarcely anything has been used to restore the lost innervation to their limbs or body. Paralytic patients are apt to remain quiet and not to exert themselves; thus the influence of the will, already diminished by the disease, is still further weakened by the want of action, even in those parts which are still under the control of the will. Such a state is followed by other bad consequences, as rigidity and stiffness or relaxation of the joints; contractions or constant extensions of the limbs; atrophy of the muscles; too great or too little sensitiveness of the nerves, or the one in some parts and the other in other parts; the abdominal instincts assume predominance, and the patient leads finally an animal life. The diminished innervation proceeds either from disease of the brain, the spine, or the nerves of the

affected organs, and therefore the movements will vary accordingly. In all cases of not entirely paralysed parts, the will being still able to act, the movement cure will soon increase the innervating power; while in completely paralysed patients the passive movements will be used at first as a substitute for the patient's own action. The neurotonic and arterial movements are used on the paralysed parts, absorbent or derivative ones on those parts where the cause of the want of innervation is seated. The following will be useful:—Pressures of the nerves, vibration, chopping, clapping, knocking, stroking, and similar movements, with passive extension and pulling; later, these combined with the half active movements (P.R.) of the limbs, and, according to the symptoms, movements acting on the brain and spine, as head pressure, head and spine chopping, etc., and contracting or relaxing movements.

Paralysis of one side of the body (hemiplegia), with constant stiffness of the joints of the right upper and lower extremities (Melicher).

Mr. P., fifty years old, of Croatia, formerly in the army, was healthy until three years ago, when he was affected with weakness and want of power in the motory nerves of the right half of the body, a condition attributed to exposure to a draught of cold air and getting wet through, and consequent suppression of the perspiration. His weakness increased, and was accompanied by pains, convulsions, spasmodic contractions of the muscles, and finally paralysis of the right side, with permanent stiffness of the right arm and leg, was developed; which disease did not improve, notwithstanding a medicinal, hydropathic, magnetic, and electric treatment, which were successively used until February, 1852. At this time, besides the paralysis, the following symptoms were present: photophobia, great hardness of hearing, difficulty of speaking, derangement of the intellectual faculties, anomalous excretions and secretions, difficulty of breathing, and such a debility of the motory nerves, that he could not use his right

arm and right leg, and was obliged to remain in bed. Whatever had hitherto been known as useful in paralysis was applied, and therefore, as a last resource, medical gymnastics were resorted to. The treatment was commenced first at home, and afterwards continued at the Institution.

The first movements prescribed were neurotonic and such as acted upon the nutrition and vivification of the muscles of the affected limbs, as chopping, vibration, rotation, gentle efforts of bending and stretching the limbs, made both by the patient and the medical man, back longitudinal chopping, back stroking, stroking of the extremities in a centrifugal direction, etc. At the commencement all movements were made in lying positions; after some improvement, in half-lying positions; and three months later, when the patient was so far improved as to be able to sit, and to stand or walk during a few minutes at a time, all movements were made in sitting, standing, or kneeling positions The gentle movements were exchanged in the course of the treatment for less gentle ones; various trunk twistings, rotations, angle movements, trunk raising in the suitable standing, sitting, kneeling, and lying trunk commencing positions, etc., were used, with half active movements (G.R.) of the right arm and leg, in various arm and leg commencing positions.

By this treatment and the simultaneously increased influence of the will on the paralysed parts, by perseverance and by the enthusiastic confidence of the patient in the medical movements, all the symptoms of paralysis disappeared by degrees, and the patient recovered, after a treatment of nine months. The patient, confined for years to his bed, was made so healthy and strong by medical gymnastics only, that he was enabled to walk for six or eight hours a day uninterruptedly, and to make excursions into the country, without being tired, and even without resting. He is perfect master of his limbs, which are entirely under his control, so that he can do all physiological movements. The arm is so far restored that he is not only able to make all arm movements, but he can even knead wax between his fingers, and carve wood with a knife.

Paralysis of the optic nerve (*amaurosis*—Neumann).

A patient suffering for six years from amaurosis had been treated, without the slightest effect, by the most celebrated oculists. He has used the following prescription and similar ones, and after five months there is such an improvement as gives hope of a perfect recovery.

1. Half stretch twist stride high sitting, trunk oblique back pulling (P.R.), with hand and head pressure (right stretch right twist right oblique back pulling).

2. Half yard chine lean stride standing, trunk back pulling (P.R.), with hand and head pressure.

3. Stride sitting, head forwards sliding (P.R.), with lower jaw and neck lifting.

4. Stem stretch lying, head and arm upwards pressure (P.R.)

5. Half think twist high stride sitting, trunk back pulling (P.R.), with elbow head pressure (right think left twist).

6. Leg forwards lying, head turning, with vibration.

7. Inclined stride sitting, trunk back pulling (P.R.), with head vibration (forehead pressure).

8. Fall stretch stride sitting, trunk raising, with point chopping on the forehead.

9. Half yard half lying, arm vibration, with head sideways pulling (P.R.)

10. Half yard inclined stride kneeling, trunk back pulling (P.R.), with head and arm pressure.

Paralysis of the right leg and foot (Neumann).

A girl, aged fifteen, was affected with paralysis of the right leg and foot to such a degree that these parts could not be moved at all by the patient, whose knee was also contracted. The following movements, and many others of a similar nature, restored her perfectly in the course of a year.

1. Half kneeling, right leg twisting, with pulling and vibration.

2. High stride sitting, trunk left sideways flexion (G.R.)
3. Half lying, pressure on the right popliteal nerve.
4. Half lying, right foot spanning, with chopping.
5. Right stretch right oblique high stride sitting, trunk left sideways pulling (P.R.)
6. Half lying, right foot pulling, with rotation.
7. Opposite kneeling, back longitudinal chopping and stroking.
8. Right span half lying, right leg twisting, with pulling.
9. Half lying, right leg jerk vibration.
10. Opposite inclined standing, chine circular knocking and stroking.

Paralytic contractions of the lower extremities (Melicher).

Two girls, one eight, the other thirteen years old, affected with paralytic contraction of the lower extremities, had, the one very little, the other scarcely any, power of moving these parts; one of them had also a spinal curvature. The cutting of the tendons, the use of walking machines, etc., had no beneficial results. The treatment of such cases is very difficult at first, as long as the spasmodic contractions are present; but when well-selected movements are continued, the power of motion returns by degrees, the pains disappear, the deformity of the spine is improved, the patients get stronger, they use their limbs with more freedom, and other secondary symptoms vanish, and all this proves that the affection of the spinal cord has ceased. In the course of the treatment the following active movements were most beneficial.

Stretch head neck lying, holding, with active raising of the loins.

Half stretch head neck lying, holding, with active raising of the loins.

Yard head neck lying, holding, with active raising of the loins.

Active stretching on the mast.

Walking, with one hand supported by a rope stretched horizontally.

Swinging on a double vertical rope, while the legs are kept in the natural position.

Shaking palsy (*paralysis agitans*) *of the left arm* (Neumann).

Mr. R., forty years old, suffered, in consequence of some considerable mental agitation, from a derangement of the abdominal nerves, and he was also previously affected with paralysis agitans of the left arm.

1. Kick half lying, leg alternate down pressure (P.R.) and raising (G.R.)

2. Yard fall (inclined) high stride sitting, alternate trunk forwards inclination (G.R.) and back flexion (G.R.)

3. Left elbow support sitting, left forearm alternate flexion (G.R.) and extension (P.R.)

4 Rest yard twist high stride oblique sitting, alternate trunk oblique forwards flexion (G.R.) and oblique forwards pulling (P.R.) (right rest left yard left twist left oblique right oblique forwards flexion and right oblique forwards pulling.)

5. Half lying, left plexus brachialis pressure and left arm downwards stroking.

6. Span reclined standing, knee alternate raising (G.R.) and down pressure (P.R.)

7. Half rest twist leg lying, alternate trunk forwards twisting (G.R.) and forwards twisting (P.R.) (right rest right twist.)

8. Right yard grasp left speak close standing, left arm alternate sideways upwards guiding (G.R.) and sideways downwards guiding (P.R.)

9. Squat half lying, plexus solaris pressure.

10. Stretch leg lying, holding.

Paralysis of the right leg and foot, and rickety curvature of the right thigh (Neumann).

A girl, of eleven years, daughter of a poor schoolmaster, at two years old began to be affected with the above-mentioned disease; the father mentioned that the child was at that time suffering from a fever which lasted a long time, but he did not remember how the pathological changes of the right leg occurred. The treatment was continued from December, 1851, to July, 1852. The little patient, who at first could not walk without the assistance of another person, as there was scarcely a trace of voluntary movement in the very emaciated and shrivelled leg and foot, took, towards the end of the treatment, very long walks, and on uneven ground, supported only by a slight stick.

The following five prescriptions were used.

First prescription.

1. Half lying, right leg extension (P.R.)
2. High stride left rest sitting, trunk left sideways flexion (G.R.)
3. Half lying, right leg extension (G.R.)
4. Trunk lying, double leg left sideways guiding (G.R.)
5. Left toe sitting, right thigh extension (P.R.)
6. High long sitting, trunk forwards pressure (P.R.)
7. Half lying, right popliteal nerve pressure.
8. Half lying, right foot passive extension, with chopping.
9. Left stretch thigh lean standing, trunk left sideways flexion (G.R.)
10. Right stretch right oblique high stride sitting, trunk left sideways pulling (P.R.)

Second prescription.

1. Half lying, right leg extension (P.R.)
2. Right stretch right twist high stride sitting, trunk left oblique forwards pulling (P.R.)
3. Half lying, right leg extension (G.R.)

4. High opposite standing, right leg sideways downwards pressure (P.R.)

5. High stride right stretch left twist sitting, trunk left oblique back flexion (G.R.)

6. Half lying, pelvis rotation, with right leg pulling.

7. Half lying, right popliteal nerve pressure.

8. Half lying right foot passive extension with chopping, and rotation with passive flexion.

9. Opposite inclined standing, circular chine knocking and stroking.

10. Right stretch left twist high stride sitting, straight trunk back pulling (P.R.)

Third prescription.

1. Stretch right squat half lying, right leg extension (P.R.)

2. High opposite right swing standing, right leg forwards pressure (P.R.)

3. Right stretch left twist long sitting, trunk left oblique backwards flexion (G.R.)

4 Right air forwards lying, right leg extension (P.R.)

5. Right stretch half lying, right leg rotation (P.R.), with pulling and with right arm pulling.

6. Opposite inclined standing, back longitudinal chopping and stroking.

7. Half lying, right foot passive extension, with chopping, and rotation with passive flexion.

8. Forwards lying, right sciatic nerve pressure.

9. Stride kneeling, right leg twisting and vibration.

10. Right stretch half lying, right leg jerk vibration.

Fourth prescription.

1. Half lying, leg division with the right leg.

2. Right stretch right stride right side falling, right leg inwards pressure (P.R.), with right arm pressure.

3. High opposite standing, right leg back pulling (P.R.)

4. Horse end sitting, right leg upwards pulling (G.R.)

5. High stride right yard right twist sitting, trunk back pulling (P.R.)

6. Right side right stride trunk lying, right leg downwards pressure (P.R.)

7. High stride right rest left twist sitting, oblique trunk back pulling (P.R.)

8. Half lying, right foot passive extension with chopping and rotation, with passive flexion.

9. Half lying, leg twisting and vibration

10. Forwards lying, right sciatic nerve pressure.

Fifth prescription.

1. Right squat lying, right knee extension (P.R.)

2. Trunk lying, double leg left sideways guiding (P.R.)

3. Left stretch deep crooked standing, trunk left sideways flexion (G.R.)

4. Span reclined standing, hip right sideways guiding (P.R.)

5. Half lying, right crural nerve pressure

6. Span reclined right squat standing, right knee down pressure (P.R.)

7. Opposite inclined standing, back longitudinal chopping and stroking.

8. Half lying, right foot passive extension with chopping and vibration, with passive flexion.

9. High stride right stretch sitting, trunk left sideways pulling (P.R.)

RUPTURE.

Dr. Streinz, speaking of the importance of the treatment by movements in umbilical, inguinal, and crural ruptures, mentions that it is to be continued in these cases at least during three months, and found it, in six cases under his observation, so beneficial, that the anomalous passage for the intestine was perfectly closed, without any further trace of the disease, even where it had existed for many years; but the cases where the

omentum is united by adhesions to the passage do not permit a radical cure. The constitutions of the patients was so improved, that the accompanying symptoms of constipation, abdominal venosity, hyperæmia of the liver, want of digestive power, hypochondriacal state of the mind, which had resisted mineral waters and the water cure, entirely disappeared. He thinks that the majority of ruptures are owing, like many spinal deformities, to the want of motory innervation of the nervous filaments supplying the various organs, and that movements which decrease the prevalent venosity, and which produce a flow of arterial blood and corresponding muscular development, might radically cure many ruptures. Six cases treated and cured according to this opinion, appear to confirm it.

The movements used for inguinal ruptures were—

1. Trunk forwards and sideways flexion (G.R.), in standing, sitting, long sitting, kneeling, falling, twisting, stretch and think position.
2. Trunk forwards twisting (G.R.), in various positions.
3. Hip twisting (G.R.)
4. Leg and knee raising (G.R.) in half lying, trunk lying, span standing, span reclined standing, yard grasp, and speak grasp position.
5. Leg rotations inwards (G.R.)
6. Movements acting on the nutrition, hæmatosis, innervation, and all other functions.

Case of double inguinal rupture (Neumann).

A very weak, unmarried lady, of thirty-eight years, and of a very weak constitution, suffered for many years from two inguinal ruptures, which were so large, that the moment the truss was removed the intestines protruded through the inguinal canals to such an extent, that the ruptures had the size of moderately large apples. When the patient was lying on his back, and the intestines replaced, two fingers could be

simultaneously introduced into the very enlarged inguinal rings. After a medico-gymnastic treatment lasting three months, the right inguinal ring was perfectly closed, and the left so far improved that the rupture showed itself only after violent coughing movements. The patient was still under treatment when this was written, and the movements used in this case acted especially on the muscles of the abdomen, pelvis, and thighs, in such a way that they were brought in action by the patient, while the gymnast resisted.

First prescription.

1. Half lying, leg raising (G.R.)
2. Half yard fall high stride sitting, trunk forwards flexion (G.R.), with hand shoulder pressure.
3. Half yard twist stride thigh lean standing, trunk forwards twisting (G.R.) (right yard right twist.)
4. Half stretch walk standing, trunk forwards flexion (G.R.) (right stretch left walk).
5. High peg grasp swing standing, leg forwards pulling (G.R.)
6. Inclined sitting, trunk alternate twisting (G.R.)
7. Stretch stride sitting, double upper and forearm flexion (G.R.)
8. Squat half lying, deep abdomen pressure.
9. Walk inclined standing, back longitudinal chopping and stroking.
10. Half lying, foot rotation.

Second prescription.

1. Stride short high sitting, double leg adduction (G.R.)
2. Half yard twist kneeling, trunk forwards twisting (G.R.) (right yard right twist).
3. Heave grasp standing, knee raising (G.R.)
4. Half lying, double leg raising (G.R.)
5. Yard stride standing, trunk forwards flexion (G.R.)
6. Rest twist fall high stride sitting, trunk forwards flexion (G.R.)
7. Yard inclined sitting, trunk alternate twisting (G.R.)

8. Squat half lying, deep abdomen pressure.

9. Half stretch step standing, trunk forwards flexion (G.R.) (right stretch left step).

10. Opposite inclined standing, back longitudinal chopping and stroking.

Third prescription.

1. Stretch lying, trunk raising (G.R.), with double arm pulling.

2. Heave stride thigh lean standing, double upper and forearm extension (P.R.) and flexion (G.R.)

3. Trunk stride lying, double leg adduction (G.R.)

4. Stem standing, knee raising (G.R.)

5. Half yard twist long sitting, trunk forwards twisting (G.R.) (right yard right twist).

6. Lying, trunk angle movement.

7. Stretch stride kneeling, trunk sideways flexion and holding.

8. Squat half lying, deep abdomen pressure.

9. Stretch yard long sitting, trunk forwards flexion and posture.

10. Lying, hip forwards twisting (G.R.)

Fourth prescription.

1. Span high standing, leg sideways raising (G.R.)

2. Yard grasp standing, hip alternate twisting (G.R.)

3. Think inclined walk standing, holding.

4. Rest twist high stride fall sitting, trunk forwards flexion (G.R.)

5. Yard step standing, trunk forwards flexion (G.R.)

6. Shelter long sitting, forwards flexion and holding.

7. Half yard twist leg lying, trunk forwards twisting (G.R.) (right yard right twist).

8. Squat half lying, deep abdomen pressure.

9. Yard grasp standing, knee raising (G.R.)

10. Stretch step standing, holding.

Inguinal rupture (Neumann).

Master G., twelve years old, suffered from inguinal rupture on both sides. At first he had a double truss, even during the hours of treatment, for two months ; later, he left it off without injury, and the cure was radical.

First prescription, July 19, 1854.

1. Kick half lying, leg alternate down pressure (P.R.) and raising (G.R.)
2. Yard close thigh opposite inclined standing, alternate back pulling (P.R.) and forwards inclination (G.R.)
3. Span squat standing, knee alternate down pressure (G.R.) and raising (G.R.)
4. Half yard twist high stride sitting, alternate forwards twisting (G.R. and P.R.) (right yard right twist).
5. Rest twist high stride oblique sitting, alternate oblique back pulling (P.R.) and oblique forwards flexion (G.R.) (right twist left oblique right oblique back pulling and left oblique forwards flexion).
6. High peg grasp swing standing, leg alternate forwards pulling ((P.R. and G.R.)
7. Star twist high stride fall sitting, alternate forwards pressure (P.R.) and forwards flexion (G.R.)
8. High peg grasp inclined close standing, back longitudinal upwards chopping and upwards stroking.
9. Half lying, stride rotation.
10. Yard squat standing, holding.

Second prescription, August 19, 1854.

1. Squat half lying, double knee extension (P.R.) and raising (G.R.)
2. Rest angle high stride fall (inclined) sitting, alternate trunk forwards flexion (G.R.) and back flexion (G.R.)
3. Heave grasp yard grasp kick (swing) standing, leg alternate back pulling (G.R.) and forwards pulling (G.R.) (right heave grasp left yard grasp left kick swing).

4. Rest long sitting, alternate trunk back pulling (P.R.) and raising (G.R.)

5. Heave grasp ledge standing, hip alternate forwards twisting (G.R.)

6. Kick half lying, leg alternate down pressure (P.R.) and raising (G.R.), with abdomen upwards clapping and stroking.

7. Span yard grasp squat standing, knee alternate down pressure (P.R.) and raising (G.R.)

8. Half lying, double leg alternate separation (P.R.) and adduction (G.R.)

9. Half rest twist leg lying, alternate back twisting (P.R.) and forwards twisting (G.R.) (right rest left twist).

10. Yard leg lying, holding.

Third prescription, September 21, 1854.

1. Span star grasp swing standing, leg alternate forwards pulling (G.R. and P.R.) (right span left star grasp right swing).

2. Stretch yard twist close thigh lean standing, alternate trunk forwards twisting (G.R. and P.R.) (right stretch left yard left twist).

3. Rest cover high stride fall sitting, alternate trunk forwards flexion (G.R.) and forwards pressure (P.R.)

4. Heave grasp standing, knee alternate raising (G.R. and P.R.), with half abdomen upwards chopping (right knee and right side of the abdomen).

5. Half stretch twist high stride sitting, alternate oblique trunk forwards flexion (G.R.) and oblique back flexion (G.R.), with hand and armpit pulling (right stretch right twist).

6. Star close fall (inclined) standing, alternate trunk forwards flexion (G.R.) and back flexion (G.R.)

7. Half stretch high stride oblique sitting, alternate trunk sideways pulling (P.R.) and sideways flexion (G.R.) (right stretch right oblique left side pulling and right side flexion).

8. Stride half lying, double leg alternate adduction (P.R. and G.R.)

9. Shelter twist high stride sitting, trunk forwards flexion

(G.R.) and back flexion (G.R.), with double elbow pressure.

10. Star stem lying, holding.

Fourth prescription, October 21, 1855.

1. Stretch trunk double kick lying, double leg alternate down pressure (P.R.) and raising (G.R.), with double hand and double foot pulling.

2. Stretch rack twist high stride oblique sitting, alternate trunk oblique forwards flexion (G.R.) and oblique forwards pulling (P.R.) (right stretch left rack left twist left oblique right oblique forwards flexion, and right oblique forwards pulling).

3. Stretch think walk fall (inclined) standing, alternate trunk forwards flexion (G.R.) and back flexion (G.R.) (right stretch left think left walk).

4. Defence forwards leg lying, double upper and forearm alternate extension (P.R.) and flexion (G.R.)

5. Span hanging, double leg alternate separation (P.R.) and adduction (G.R.), with abdomen upwards clapping.

6. Rest star heel support twist standing, alternate trunk forwards twisting (P.R.) and back twisting (G.R.) (right rest left star right heel support left twist left forwards twisting, and left backwards twisting).

7. Squat lying, double knee alternate separation (P.R.) and adduction (G.R.)

8. Half stretch twist leg lying, alternate back twisting (P.R.) and forwards twisting (G.R.) (right stretch left twist).

9. Stem wave lying, leg inwards pressure (P.R. and G.R.)

10. Stretch inclined close standing, holding.

EXCESSIVE MENSTRUATION (*Catamenia nimia*). Neumann.

Prescription for Miss B., eighteen years old.

1. Span rack standing, arm alternate extension (P.R. and G.R.)

2. Star half lying, double arm rotation with pulling.

3. Half yard twist high stride sitting, alternate trunk for-

wards twisting (G.R.) and back twisting (P.R.) (right yard right twist).

4. Rest long twist sitting, alternate trunk oblique forwards and backwards flexion (G.R.), with double elbow pressure.

5. Half stretch half lying, upper and forearm alternate flexion (P.R.) and extension (G.R.)

6. Shelter close thigh opposite fall (inclined) standing, alternate trunk forwards inclination (G.R.) and back flexion (G.R.)

7. Stretch yard kneeling, alternate trunk forwards inclination (G.R.) and back flexion (G.R.), with double hand and double leg pressure.

8. Stretch rest oblique high stride sitting, alternate trunk sideways flexion (G.R.), with hand elbow pressure (right stretch left rest right oblique left sideways and right sideways flexion).

9. Rack close reclined standing, double arm alternate extension (G.R. and P.R.)

10. Half stretch twist leg lying, holding (right stretch right twist).

DEFICIENT MENSTRUATION (Neumann).

Prescription for Miss B., twenty-five years old.

1. Forwards lying, double leg alternate flexion (P.R.) and extension (P.R.)

2. Stretch yard oblique stride standing, alternate trunk sideways flexion (G.R.) and sideways pulling (P.R.) (right stretch left yard right oblique left sideways flexion and right sideways pulling).

3. Span stride hanging, alternate double leg adduction (P.R.) and separation (P.R.)

4. Star high stride fall (inclined) sitting, alternate trunk forwards pressure (P.R.) and back pulling (P.R.), with double hand pulling.

5. Half lying, foot rotation.

6. Stretch yard twist thigh lean stride standing, alternate trunk twisting (G.R. and P.R.)

7. High peg grasp kick (swing) standing, leg alternate back pulling (P.R.) and forwards pulling (P.R.)

8. Half lying, stride rotation and thigh extension (P.R.)

9. Stretch trunk lying, double leg alternate down pressure (P.R.) and up pressure (P.R.), with double hand pulling.

10. Stretch trunk lying, pelvis rotation and pulling, with double hand pulling.

11. Yard leg lying, holding.

UTERINE HÆMORRHAGE AND FALLING OF THE WOMB (*Metrorrhagia and prolapsus uteri*). Melicher.

Mrs. H., twenty-three years old, vaccinated, healthy as an infant, suffered in her fifteenth year from green sickness (chlorosis) and irregular menstruation. She was married in her nineteenth year, and was soon after pregnant. The period of pregnancy was quite normal; but a week after her regular confinement she suffered from an inflammation of the uterus, with metrorrhagia, which continued with short intervals for six months, notwithstanding the most careful treatment of several eminent medical men, and the most attentive care bestowed upon her; the patient becoming at last quite anæmic, and extremely exhausted, was declared to be in a hopeless condition. In this state Dr. Melicher began his treatment. She was then very weak, speaking was troublesome and fatiguing; she complained of violent pains in the chest, palpitation of the heart, constipation, cold extremities; the pulse was scarcely to be felt, the abdomen distended, and very sensitive in the hypogastric region. The examination per vaginam showed a partial prolapsus of the vagina and uterus; the os uteri felt spongy, and was directed backwards; by the aid of the speculum bleeding warts were seen, which partly covered the os uteri; the vagina was covered with liquid and clotty blood; the torn perinæum was cicatrised. A medicinal treatment, with astringent medicines during a month, enabled the patient to leave her bed, but did not stop the uterine bleeding, which

still continued, although in a slighter degree. A further medicinal treatment was thought useless, and Dr. Melicher prescribed the following movements.

1. Yard standing, arm rotation.
2. Yard inclined sitting, alternate trunk twisting.
3. Squat half lying, knee separation.
4. Squat half lying, lower cava vena pressure.
5. Standing, flying movements.
6. Half lying, trunk angle movement.
7. Yard stride sitting, double arm flexion.
8. Support standing, (groin) inguinal stroking, with double knee flexion.
9. Opposite stride standing, chine pressure.

After the first application of these movements the loss of blood was more copious; the second day it diminished, and the third day it ceased entirely. The patient, who had been declared incurable, recovered entirely in the course of three weeks; her appearance improved, her size and strength increased, the appetite was good, the action of the bowels regular, and the extremities warm. The great sensibility disappeared, and she is in good spirits and enjoys life. A month later the menstruation appeared, and lasted a few days. The local examination proved that the prolapsus of the vagina was removed, and the uterus returned into the pelvis; the ulcerations were cicatrised. In the sixth week she left the Institution cured and perfectly happy, and continues well.

All half active arm movements, and also the following passive movements, are useful in metrorrhagia.

Screw twisting, concentric stomach and abdomen fulling, pressures on the sacral plexus, on the stomach and loins, on the stomach and back, on the abdomen and chine, on the abdomen and loins, and many others.

CONSEQUENCES OF ONANISM AND MASTURBATION, AND SEXUAL ABUSE.

The host of morbid symptoms which come under this head

can be prevented only by gymnastics; and as the fundamental derangement of the nervous system, in its various manifestations, is the seed and cause of so many irretrievably shattered constitutions during life, every man really interested in the welfare of our race will advocate scientific gymnastics as an important preventive, not only of deformities, but also of many nervous diseases originating in sexual abuse. At this moment a patient recommended by Dr. Cronin to my Institution is under treatment, who, in consequence of onanism practised for several years, at the age of fourteen to eighteen, became by degrees so contracted that he was unable, when standing, to place his feet more than a few inches apart; his thighs and pelvis are so placed that the upper part of the body forms with the legs in the standing position, instead of a straight line, an angle of about 125° to 130°; he is so stiff in the whole spine, which is curved forwards, that he can neither bend nor turn the head or trunk in any direction; his arms are bound down at the shoulder-joints; his chest compressed and hollow; the rigidity of the muscles, which are in many places like cords, is very great; his knees are twisted inwards and the feet outwards, and he walks only with the help of a crutch and stick; the intellectual faculties are good, and the respiratory and abdominal functions are regular. As he is a draughtsman, his circumstances do not permit him to leave his employment every day, and he therefore attends the Institution only once a week, where passive arm and hip rotation, fulling of arms and legs, linear longitudinal back chopping, and some half active movements (P.R.) of the arms, trunk, and legs are made. At home, some active and several of the passive movements are used daily. Although he has been twenty years in this state, he has slightly improved in the course of ten weeks; his feet can be placed eighteen inches apart; his arms are almost entirely free, and traces of head and trunk movements are visible; his chest is enlarged, and his general appearance improved.

SPERMATORRHŒA.

In the morning a well-regulated medico-gymnastic treatment, in the course of the day suitable bodily activity and occupation, in the evening a walk and a good regimen, are more efficacious than bark, iron, and cold water (Melicher).

The movements, differing according to the various symptoms, are arterial and neurotonic with regard to the whole body, and absorbent with regard to the affected organs; as, for instance—

Neck chopping.
Neck sawing.
Chine stroking, chopping, and knocking.
Perinæum vibration.
Chopping, stroking on the spine.
Chopping on the inner surface of the thighs.
Half active arm movements.

SCROFULA AND RICKETS.

As these diseases appear under so many forms, the treatment is directed to improve the constitution as well as the individual symptoms; and as, in the majority of cases, the nutrition and assimilation is deficient, it is most important to pay particular attention to the abdominal and respiratory organs. Instances of movements suitable for this purpose are—

Stomach and abdomen fulling.
Stomach and abdomen stroking.
Loin chopping.
Chine knocking.
Abdomen and chest vibrations.
Chest spanning (P.R.)
Trunk twisting (P.R.)

In general, arterial half active movements of the upper and lower extremities and the trunk, combined with holding, in such positions by which considerable portions of the patient's body are brought into a state of tension. With

regard to the local treatment, I must refer to the cases of goitre, of tabes mesenterica, and several cases of spinal curvature in scrofulous and rickety individuals.

GOITRE.

Miss ——, fourteen years old, fair, tall, and weak, was sent to my Institution by Dr. Dudgeon.

Symptoms.—Slight lateral spinal deviation, head very much inclined forwards, contracted chest, the shoulder very prominent, the left shoulder-joint very stiff, the back very round; she is frequently hoarse; cannot read aloud longer than ten minutes, without feeling husky; her throat is thin and long, and a goitre has been developed during the last two years in front of the throat; and although the suitable medicines and also mesmerism were had recourse to for several months, they did not influence the goitre, which continued growing. Feet and hands were cold; the menstruation and functions of the digestive organs were regular. She began treatment on the 25th of January, 1855, and continued to visit the Institution daily to the 4th of April; when she returned, in June and July, she was only twice a week under treatment. Besides a general constitutional improvement, the chest was dilated, the goitre so much diminished that the throat appeared in front almost normal; in the profile the increased gland is still perceptible by a slight curve; the head and spine are upright; she is able to read for half an hour to three quarters of an hour without the slightest inconvenience. As this young lady will again return to the Institution, there are reasons to hope for a perfect cure; the more so, as such active movements as invigorate the system, and such passive movements as increase the absorption in the hypertrophic organs, are assiduously continued at home. The following four prescriptions have been used.

First prescription.

1. Half lying, left foot flexion (G.R. and P.R.) and extension (G.R.)

2. Leg lean trunk and thigh lying, leg extension (G.R.) and flexion (P.R.), more with the left.

3. Half lying, arm rotation (passive), more with the left.

4. Chine lean crooked stride standing, back flexion (G.R.)

5. Elbow support half lying, forearm extension (G.R. and P.R.)

6. Swing lying, leg separation (G.R.) and adduction (P.R.)

7. Lying, arm movements (active).

8. Stride sitting, head turning (G.R.)

9. Half lying, throat stroking and larynx vibration.

10. Half lying, loin stroking.

Second prescription.

1. Half lying, left foot rotation (P.R. and G.R.)

2. Half curtsey half lying, left leg extension (G.R.) and flexion (P.R.)

3. Yard left twist right walk standing, trunk forwards twisting (G.R.), with double arm pressure.

4. Right yard high stride sitting, left sideways flexion (G.R.), with right hand pressure.

5. Right rest left hip lean right walk standing, left sideways pulling (P.R.), with right elbow pressure.

6. Rack wing high stride sitting, arm extension (G.R.), with hand pressure.

7. Rack stride thigh opposite deep crooked standing, back raising (G.R.), with double hand pulling.

8. Span grasp standing, leg sideways raising (G.R.)

9. High stride twist sitting, forwards twisting (G.R.)

10. High peg grasp lean standing, alternate head twisting (G.R.)

11. Half lying, throat vibration and stroking.

12. Half lying, external jugular vein pressure.

13. Opposite stride inclined standing, back longitudinal stroking.

Third prescription.

1. High opposite standing, foot flexion (G.R.) and extension (P.R.)

2. Half squat half lying, leg extension (G.R.)

3. Right stretch left oblique standing, trunk twisting (G.R.)

4. Right stretch left yard high stride left oblique sitting, right sideways flexion (G.R.)

5. Right oblique left hip lean close standing, trunk to the left pulling (P.R.)

6. Rack stride standing, arm extension (G.R.)

7. Wing deep crooked thigh opposite standing, trunk raising (G.R.)

8. Hanging, leg separation (G.R.) and adduction (P.R.)

9. Stretch stride standing, double arm flexion (G.R.) and extension (P.R.)

10. Pass standing, alternate trunk twisting (G.R.)

11. Stride standing, head sideways flexion (G.R.) and extension (P.R.)

12. Half lying, throat vibration.

13. Half lying, throat chopping and stroking.

14. High peg grasp lean standing, trunk forwards pulling and loin forwards stroking.

Fourth prescription.

1. High opposite kick standing, leg back guiding (G.R.) and forwards guiding (P.R.)

2. Stride toe curtsey standing, knee extension (G.R.)

3. Stretch stride crooked standing, trunk twisting (G.R.)

4. Rack stride standing, arm down and back pressure (G.R.) and upwards pressure (P.R.)

5. Stretch leg opposite inclined standing, arm guiding sideways and downwards (G.R.)

6. Wing forwards trunk lying, sideways flexion (G.R.)

7. Yard standing, preparatory movements for the leap (active).

8. Hanging leg outwards twisting (P.R.) and separation (G.R.), and adduction (P.R.)

9. Active arm movements in pass standing position.

10. Half lying, throat vibration and lateral stroking.

11. Half lying, external jugular vein pressure.

12. Half lying, lateral throat chopping.

13. High peg grasp lean standing, trunk forwards pulling and loin forwards stroking.

Goitre (Melicher).

Mr. T. S., sixty-seven years old, suffered from a goitre which was as large as the head of an adult person, and had a circumference of twenty-five inches, and extends from the chine on both sides downwards to the sternum. Notwithstanding the advice of the most celebrated physicians, and the use of iodine and the compounds of this medicine, the swelling increased, and, as a last resource, movements were used, which, after twelve days, produced a diminution of the swelling, a stoppage of new exudation into the bag, and a considerable relief of the symptoms produced by the compression of the organs of the throat, and the consequent change in their position.

ABDOMINAL WASTING (*Tabes mesenterica*). Melicher.

A baby, five months old, suffered from mesenteric tubercles, without any inflammatory symptoms; the abdomen was large, tympanitic, and hard; glandular swellings were felt under the abdominal integuments, and several of these glands were even visible. The body was quite emaciated; the face was whitish-yellow, cachectic, and with red spots in the cheeks; the cervical and inguinal glands were swollen, and the stools had the characteristic white colour. The child was crying day and night, and could not be soothed in any way, and although treated medicinally, the disease still progressed, when the following passive movements were prescribed.

1. Lying, stomach transversal stroking.
2. Lying, lateral abdomen stroking.
3. Lying, double knee inwards pressure.
4. Lying, gentle stomach vibration.

5. Horizontal arm rotation.

6. Lying, gentle inguinal (groin) stroking.

The little patient was bathed every day in tepid water, and daily carried for an hour in the open air.

In three weeks the child improved considerably, and then by degrees the morbid symptoms diminished, the stomach became smaller, the stools regular, the narrow and laterally compressed thorax enlarged, and the child got a fresh and healthy appearance. In the fifth week the child was quite well, its sleep quiet, the body increased in bulk, and layers of fat formed under the skin. She was dismissed in the sixth week. The mother was advised to continue the prescribed passive movements (Melicher).

CHRONIC HEADACHE (*Cephalalgia*).

Several patients affected with this disease were considerably relieved or cured by the following movements, of which passive rotation, vibration, chopping, stroking, and pressure were made gently on the head; and as soon as the circulation and temperature of the feet and hands, which were generally cold, improved, the same passive head movements were combined with half active arm, trunk, and leg movements.

Instances of Prescriptions (Neumann).

I.

1. Stride half lying, leg adduction (G.R.)
2. Stretch stride sitting, upper and forearm flexion (G.R.)
3. Half yard lean standing, arm rotation.
4. Long sitting, trunk back flexion (G.R.)
5. Opposite standing, curtseying (G.R.), with stomach loin pressure.
6. Free standing, head back flexion (G.R.)
7. Stride sitting, head chopping, pressure of the forehead and back of the head, with stroking downwards from the side of the head to the arms.
8. Lean standing, arm jerk vibration.

9. Horse transversal sitting, leg extension (G.R.) and flexion (G.R.)

10, Stretch stride sitting, chest spanning.

11. Trunk lying, pelvis rotation.

II.

1. High stride sitting, leg adduction (G.R.)

2. Half stretch walk hip lean standing, trunk sideways flexion (G.R.) (right stretch right walk right hip lean right sideways flexion).

3. Half lying, trunk angle movement.

4. Swim stride hanging, leg adduction (G.R.)

5. Half lying, leg upwards pulling (G.R.)

6. Reclined forwards leg lying, head longitudinal stroking, stroking upwards on the back part of the head, and against the hair, with temple pressure.

7. Stretched deep crooked standing, upper and forearm flexion (G.R.)

8. Span reclined standing, knee raising (G.R.)

9. Stem lying, head longitudinal chopping.

10. Half lying, loin lifting and stroking.

11. Yard half lying, double arm vibration.

12. Half yard stomach opposite deep crooked standing, trunk raising (G.R.)

III.

1. Half rest high stride twist sitting, oblique back flexion (G.R.) (right rest right twist right oblique back flexion).

2. Think inclined stride sitting, trunk alternate twisting (G.R.)

3. Half lying, leg rotation (G.R.)

4. Stride stomach opposite crooked standing, head rotation (passive).

5. Leg half stem lying, leg adduction (G.R.)

6. Twist free standing, head back flexion (G.R.)

7. Span reclined leg forwards lying, head longitudinal chopping.

8. Stretch fall stride sitting, trunk raising (G.R.), with forehead pointing.

9. Speak calf lean stride standing, double arm sideways upwards guiding (G.R.)

10. Crooked stomach opposite stride standing, head turning, with vibration.

SPASM OF THE CALF OF THE LEG (Melicher).

Mrs. ——, twenty-five years old, is at present in the fifth month of her third pregnancy; she suffered from local spasms during her previous pregnancies, which increased in violence towards the end of her pregnancy, and by degrees after her confinement, under the form of puerperal spasms. This time the spasms began as early as the second month, in the flexors and extensors of the thighs and legs, and still more in the muscles of the calf. The spasmodic contractions of these muscles came on suddenly, eight to twelve times a day, especially in the evening and before bedtime. These convulsive muscular contractions were accompanied by considerable pain, flexion of the limb, and impeded mobility. Such general movements were prescribed as draw the blood from the head, and effect its equal distribution over the whole body; movements of the upper extremities and trunk (the latter very cautiously at the commencement of the treatment); then movements acting on the affected muscles. These last were different, according as they were made during the spasms or in the interval; in the latter case stroking, pressure kneading, and fulling were made on the muscles of the calf; and during the spasms half active foot movements (P.R.), foot flexion, and leg extension. The patient could instantaneously stop the commencing spasm by stemming the stretched foot against a fixed object (for instance, the wall), and by bending it, being in fact a simultaneous foot flexion and leg extension. By the movements mentioned, several of which were made on the patient at home, the spasms disappeared entirely during the pregnancy, and she felt much better than

in the two previous pregnancies. She did not suffer from puerperal spasms during the confinement, was free from all convulsions, and remained well (Melicher).

EPILEPSY.

In many cases the movements or manipulations will retard or relieve an epileptic fit, and popular medicine offers many instances of their empiric application. In all cases, with the exception of those where organic changes of the central nervous organs are the cause of the fits, much is reasonably to be expected from medical gymnastics. In the curable cases, it is most important to inspire the patients with confidence and hope for their recovery, to act by occupation and action on their minds, in order to prevent them from being constantly occupied with their disease. Melicher says that, by psychical influence and strengthening the patient's will, he has so far improved a girl of twenty-four years, affected from her seventh year with almost daily epileptic fits, notwithstanding the application of the most varied medical treatment, that she has not more than three to four fits in a year.

Epilepsy.

Dr. Melicher mentions the following two cases, the one of a girl, of two years and a half old, who suffered since she was four months old, in consequence of venous stasis of the central nervous organs; and the other case relates to a lad of eighteen, a maker of harmonicons, who suffered from his second year, and was also affected with tape-worm.

In both cases the disease began with slight convulsive symptoms, which in the end assumed the character of complete epileptic fits; both patients had daily one or several paroxysms, and both have been previously treated medicinally. The gymnastic treatment was used in the free intervals, and consisted of derivative, direct-arterial, and neurotonic

movements, used either as acting generally or locally on the abdomen. In both cases, the fits ceased after a few days, and the girl was perfectly relieved after two months, and, at the time of writing this article, four months have passed without the child having had an epileptic fit. The lad affected with tænia left after the third week, and it could not be ascertained whether his fits returned or not.

ST. VITUS'S DANCE (*Chorea*).

Miss ——, twelve years old, well developed for her age, rather fat, not yet menstruated, suffered a year ago from asthmatic fits. Dr. Henriques, who had cured her of those fits, recommended the movement cure, which she began on the 1st of March, 1855. She suffered frequently from headache; the right arm and leg were involuntarily moved, the leg in a very small degree; the right arm was more restless, and when she wished to move it one direction, it moved in another. While I examined her, she made a greater effort to stretch the arm straight upwards, and felt such a pain in the direction of the brachial nerve, that she burst out crying; there was a slight spinal deviation, and some pain under pressure in the region of the lowest neck and upper dorsal vertebræ; the head was inclined forwards, and the shoulders very much raised.

The following prescription improved her in the first week, and restored her arm in three weeks. She continued the treatment for three weeks longer, when more active movements were used to strengthen her spine and improve her position. I saw her towards the end of August, when she still continued well, without any return of the chorea.

1. Half lying, head down stroking and right arm downwards stroking.

2. Half lying,, right arm fulling.

3. Half lying, passive foot rotation and flexion and extension (G.R. and P.R.)

4. Stride chine lean crooked standing, trunk raising (G.R.)

5. Leg lean trunk and thigh lying, right knee flexion and extension (G.R.)

6. High stride sitting, trunk twisting (G.R. and P.R.)

7. Lying, hip rotation.

8. Stride chine lean standing, head back flexion (G.R.)

9. Half lying, right arm chopping.

10. Half lying, right arm pulling.

11. Half lying, right arm stroking.

12. Half lying, loin lift stroking down the legs.

St. Vitus's dance, and lateral curvature of the spine to the right, in a girl of nine years (Neumann).

1. Left span right stretch close standing, right upper and forearm alternate flexion (G.R. and P.R.)

2. Left stretch right angle closed thigh opposite fall (deep crooked) close standing, alternate trunk forwards inclination (G.R.) and back flexion (G.R.)

3. Stretch high stride right oblique sitting, alternate trunk left sideways flexion (G.R.) and left sideways pulling (P.R.)

4. Span stride hanging, double leg alternate adduction (P.R. and G.R.)

5. Left span right rack close standing, right arm alternate extension (P.R. and G.R.)

6. Rest forwards leg lying, alternate trunk down pressure (P.R.) and raising (G.R.), with double elbow pulling.

7. Left stretch right angle right oblique leg lying, alternate left side flexion (G.R.) and left side pulling (P.R.)

8. Stretch stride kneeling, right arm sideways downwards alternate guiding (G.R. and P.R.) with left hand pulling.

9. High peg grasp right wave standing, right leg alternate downwards sideways pressure (P.R. and G.R.)

10. Left stretch left twist leg lying, alternate trunk forwards twisting (G.R. and P.R.)

COLD HANDS AND FEET.

In a large number of head, chest, and abdominal complaints, and in many nervous affections, cold hands and feet are constant symptoms; in other cases, the want of innervation and the deficient circulation in the hands and feet are symptoms preceding the development of other diseases. Many professional men have scarcely paid any attention to these symptoms, although they occur so frequently, and their removal is most desirable. Instances of movements used for this purpose are to be found in the following.

Cold hands, and cold perspiration of the hands.

Arterial, direct-venous, and neurotonic movements; as, for instance, hand flexion (P.R.), extension (P.R.), rotation (P.R.), finger flexion, extension, adduction, and separation, rotation (P.R.), fulling, stroking, vibration and (passive) rotation of the hands, flying, pumping, etc.; pressure on the median nerve and brachial plexus.

Instances of Prescriptions (Neumann).

I.

1. Lean flight standing, double forearm extension (P.R.) and finger separation (P.R.)
2. Stretch abdomen opposite reclined standing, trunk forwards pressure (P.R.), with chine pressure.
3. Roof stride hanging, leg adduction (P.R.)
4. Yard elbow support stride sitting, double forearm flexion (P.R.) and double hand extension (P.R.)
5. Heave standing, chest spanning (P.R.)
6. Lean rack standing, double hand rotation (P.R.) and double hand flexion (P.R.)
7. Rack fall stride sitting, double arm extension (P.R.) and double arm flexion (P.R.)

8. Stretch speak sideways falling, arm sideways and upwards guiding (P.R.), with arm pressure (right stretch left speak left arm guiding and right arm pressure).

9. Half lying pressure on the brachial plexus of the arm.

10. Half stretch twist high sitting, trunk oblique back pulling (P.R.) (right stretch right twist right oblique back pulling).

II.

1. Lean standing, clenched fist opening (P.R.)

2. Span stretch reclined standing, trunk back twisting (P.R.)

3. Stretch stem lying, arm upwards and backwards pressure (P.R.)

4. Half speak stride sitting, arm guiding (outwards and upwards, inwards and forwards, backwards and outwards) (P.R.)

5. Stride sitting, arm flying.

6. Opposite inclined standing, back longitudinal chopping and stroking.

7. Chine lean standing, double arm pumping, in different levels (P.R.)

8. Half stretch fall stride sitting, trunk contortion.

9. Shelter leg forwards lying, trunk alternate twisting (P.R.)

10. Half yard lean standing, arm rotation (P.R.)

III.

1. Stretch fall stride high sitting, double arm down pressure (P.R.)

2. Span yard standing, arm throw twisting.

3. Stretch stride kneeling, trunk back pulling (P.R.), with knee chine pressure.

4. High stride half rack sitting, arm rotation (P.R.)

5. Yard short stride sitting, leg adduction (P.R.), with double arm pressure.

6. Half yard chine lean fall stride standing, arm flexion (P.R.)

7. Half rest high stride sitting, arm extension (P.R.)

8. Half yard hip lean walk standing, trunk sideways pulling (P.R.)

9. Half stretch half lying, trunk arch twisting.

10. Opposite yard standing, arm guiding (upwards and downwards) with arm pressure (outwards and inwards).

11. Half lying, pressure on the nervus medianus.

12. Yard standing, general stroking of the body.

Cold feet.

Arterial, direct-venous, and neurotonic movements are used; as, for instance—

Foot rotation (P.R.) also passive.

Foot flexion (P.R. and G.R.)

Foot extension (P.R. and G.R.)

Toe flexion and extension (P.R. and G.R.)

Fulling of the legs.

Pressure on the popliteal nerve.

Leg and foot vibration and stroking.

Instances of Prescriptions (Neumann).

I.

1. High opposite standing, foot flexion (P.R.) and foot extension (P.R.)

2. Stretch trunk lying, double leg down pressure (P.R.)

3. Stride half lying, leg adduction (P.R.)

4. Stride twist sitting, trunk back pulling (P.R.)

5. Half lying, foot rotation.

6. Stem stride lying, leg inwards pressure (P.R.)

7. Tumble half standing, leg downwards pressure (P.R.)

8. Forwards lying, pressure on the popliteal nerve.

9. Opposite inclined standing, circular chine knocking and stroking.

10. High short sitting, leg rotation (P.R.)

II.

1. Horse transversal sitting, leg flexion (P.R.) and extension (P.R.)
2. Half stretch stride sideways falling, leg inwards pressure (P.R.) (right stretch left stride right side falling).
3. Roof squat hanging, knee down pressure (P.R.)
4. High opposite swing standing, leg down pressure (P.R.)
5 Toe support standing, leg curtseying (P.R.) and extension (G.R.), with heel and shoulder pressure.
6. Half kneeling, leg twisting (P.R.)
7. Half lying, leg twisting (P.R.)
8. Half lying, percussion on the sole.
9. Half lying, foot rotation (P.R.)
10. Half yard chine lean stride standing, trunk plain twisting.

III.

1. Squat half lying, knee extension (P.R.)
2. Span kick stride reclined standing, leg inwards pressure (P.R.)
3. Swim stride hanging, leg adduction (P.R.)
4. Toe half sitting, knee extension (G.R.), with chine foot pressure.
5. Air opposite standing, leg twisting (P.R.)
6. Span kick standing, hip twisting, with foot pressure.
7. Span trunk lying, double leg sideways pulling (P.R.)
8. Saddle squat sitting, knee down pressure (P.R.)
9. Short sitting, leg separation (P.R.)
10. Squat standing, leg vibration on the balancing bar.
11. Forwards lying, pressure on the sciatic nerve.

SLIGHT DISLOCATION OF THE LEFT SHOULDER AND LEFT KNEE JOINTS (Neumann).

Mr. S., thirty-three years old, suffered from a relaxed state of the ligaments of the left shoulder and left knee joints to

such a degree, that his walk and the movements of his left arm became uncertain and wavering, in consequence of the subluxation of the above-mentioned joints.

1. Stride half lying, double leg alternate adduction (P.R.) and separation (P.R.)

2. Rest stride thigh opposite fall (inclined) standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)

3. High peg grasp standing, leg alternate sideways raising (G.R.) and sideways down pressure (P.R.)

4. Speak forwards leg lying, double arm alternate sideways upwards guiding (G.R. and P.R.)

5. Half lying, left arm rotation (G.R.) (in speak, yard, and star position), with shoulder chopping.

6. Span star stride twist reclined standing, alternate trunk forwards twisting (G.R.) and back twisting (P.R.) (right span left star left twist).

7. Half lying, left leg alternate extension (G.R. and P.R.), with knee upwards chopping and upwards stroking.

8. Stretch trunk lying, double leg alternate down pressure (P.R. and G.R.), with double hand pulling.

9. Rest fall (inclined) thigh opposite standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.), with back longitudinal downwards chopping and downwards stroking.

10. Left yard leg lying, left arm alternate flexion (G.R.) and extension (G.R.) with left shoulder clapping.

11. Stride half lying, double leg alternate adduction (P.R. and G.R.), with left knee downwards chopping and downwards stroking.

12. Tumble standing, holding.

MUSCULAR WEAKNESS (Neumann).

1. Span standing, leg alternate sideways raising (G.R.) and downwards pressure (P.R.)

2. Yard stride thigh lean standing, double arm alternate flexion (G.R.) and extension (P.R.)

3. Shelter close fall thigh opposite standing, alternate trunk forwards pressure (P.R.) and back flexion (G.R.)

4. Stretch stride trunk lying, double leg alternate adduction (G.R.) and separation (P.R.)

5. Half yard twist heel support standing, alternate back twisting (P.R.) and forwards twisting (G.R.) (right yard left twist left heel support right back twisting, right forwards twisting).

6. Rest forwards leg lying, alternate down pressure (P.R.) and raising (G.R.)

7. Span stride hanging, double leg alternate adduction (P.R. and G.R.), with back longitudinal chopping and stroking downwards.

8. Stretch yard stride fall (inclined) kneeling, alternate trunk forwards inclination (G.R.) and back flexion (G.R.)

9. Star step thigh opposite fall (inclined) standing, alternate trunk forwards pressure (P.R.) and back pulling (P.R.)

10. Star stem lying, holding.

DISEASE OF THE HIP-JOINT (*Coxarthrocace*). Melicher.

Miss E., nine years old, affected with kyphosis, has suffered for a fortnight from an inflammation of the right hip-joint. The coxarthrocace is in the first stage, and the pain in the popliteal region is very considerable, especially during the night, so that the patient has no rest at all; the lower extremity is elongated, the hip-joint swollen, and painful under pressure on the trochanter major; the limb is obliquely placed, and the other symptoms of the complaint present.

The child cannot walk, and can only stand for a few moments. Besides the movements tending to the restoration of the normal position and the removal of the kyphosis, such as improve the lymphatic scrofulous constitution, and indirectly contribute to diminish the inflammatory state of the hip-joint, were used; for instance, gentle passive hip rotations, active leg extension, right foot passive rotation, with passive extension. The rest of the movements were directed to the

trunk, abdomen, and the healthy limbs. After the third day the pain during the night was less, and a slight extension and other movements of the bent leg possible, so that the patient could stand for ten to fifteen minutes.

NECROSIS OF THE THIGH (Neumann).

Mr. L., twenty-eight years old, suffers from necrosis of the right thigh-bone, with two fistular openings, and varicose veins of the right knee, leg, and foot. It was the fifteenth prescription used by the patient.

1. Right wave half lying, alternate right leg adduction (G.R.) and left leg separation (P.R.)
2. Heave grasp standing, head alternate forwards flexion (G.R.) and back flexion (G.R.)
3. Half lying, right leg alternate outwards twisting (G.R.) and inwards twisting (P.R.), with right ankle-joint transversal chopping and stroking.
4. Speak forwards leg lying, alternate double arm sideways upwards guiding (G.R.) and sideways upwards guiding (P.R.)
5. (Left kick) lying, alternate right leg raising (G.R.) and left leg down pressure (P.R.)
6. Shelter inclined (fall) high stride sitting, alternate trunk forwards inclination (G.R.) and back flexion (G.R.), with double forearm pressure.
7. Forwards lying, alternate right leg flexion (G.R.) and left leg flexion (P.R.), with right calf upwards clapping and stroking.
8. Rest twist high stride oblique sitting, alternate trunk oblique forwards pulling (P.R.) and oblique back pulling (P.R.)
9. Half lying, double foot alternate extension (P.R.) and flexion (G.R.), with right ankle-joint clapping and stroking.
10. Star stem lying, holding.

Necrosis of the ulna.

Mr. ——, thirty-five years old, suffered, when eighteen years old, from a rheumatic inflammation of the left elbow-joint and the ulna. Copious blood-letting from the right arm, and a large number of leeches locally applied, calomel, and other medicines, prescribed by Professor Berres, and his assistant, the present Professor Hyrtl, at Vienna, did not arrest the disease, which ended in suppuration, and for many years undermined the health of the patient, who suffered for fifteen years from a necrosis of the left ulna. By great attention to regimen, the general health was perfectly restored; but an ankylosis of the left arm and the fistulous openings produced by the necrosis remained. The patient objected to any surgical operations with the knife for the removal of the dead bone, and the following movements were prescribed.

1. Longitudinal left forearm chopping.
2. Flexion and extension of the left hand and fingers (P.R.)
3. Compression of the arm above the elbow-joint by the tourniquet without pad for five minutes.
4. Pointing or point percussion on those parts of the forearm which were not painful.
5. Passive hand rotation, with hand pulling.
6. Active arm, hand, and finger rotation.
7. Circular compression made (by the right hand of the patient) above the left elbow-joint daily, in the morning and evening, from three to five minutes.

The patient was also advised to use his left arm frequently.

By persevering during nearly a year with these movements, a piece of bone, a little more than three inches long, and in some places two lines, in others almost half an inch wide, with sharp and projecting edges, was thrown out. When this sequester protruded about an inch, at an angle of thirty-five to forty degrees to the surface of the arm, it was filed through, and a second time, when it again protruded an inch, without the least pain to the patient, whose

arm, although ankylosed at the elbow-joint, has been otherwise perfectly well for the last three years.

DROPSY OF THE KNEE-JOINT (Melicher).

A girl, five years old, affected with lateral curvature of the spine to the right, suffered also from dropsy of the right knee-joint, which had a circumference of twelve inches, and for which she was treated during a year by various medicines, amongst which was iodine. Scrofula was the cause of the scoliosis, and of the affection of the knee-joint; and, besides the movements prescribed to improve the constitution, the following were employed to diminish the size of the knee.

Vibration of the right lower extremity, stroking of the posterior side of the thigh, knee-joint, and leg, with a glass rod; fulling and kneading of the muscles of the thigh and leg; circular compression of the thigh by a tourniquet without a pad; moderate pressure of the knee-joint by the hands of the gymnast.

The treatment lasted four months, and the child was dismissed cured.

CONTRACTION OF THE KNEE.

Miss ——, forty years old, suffered since her childhood from necrosis of the right tibia, in consequence of which the ankle-joint was ankylosed, and the knee contracted; the heel, in the standing position, was about two inches and a half distant from the ground. Being obliged to use either a crutch or two sticks, her body was very much bent forwards, her chest narrow, and her back very round; the shoulders raised almost to the ears.

After a treatment of twenty-two weeks, her knee was so far stretched that, with a cork sole about half a line thick under the toes, and about two lines under the sole, she touched the ground, and was able to walk in the room with-

out crutch or stick; the deportment was entirely changed, and none of her dresses fitted her, as the chest enlarged in the same proportion as the roundness of the back diminished. Many half active head, arm, and trunk movements, in various commencing positions, were used for improving the position of the body, only as accessories, while more attention was paid to the leg, on which half active flexion and extension (P.R.) passive leg twisting, fulling, kneading, chopping, point percussion, and compression above the knee by a tourniquet without a pad, were the principal movements used.

During the last four years she has still further gained in strength.

CHOLERA.

Dr. Melicher (who in 1831 witnessed the cholera at Rzeszow, in Gallicia, and who treated many cholera patients in 1836, was appointed by the government as physician at Vienna, during the epidemics of 1849 and 1850, and had ample opportunities of observing cholera in 1854), mentions the following facts.

1. That none of the persons who had been previously treated for various diseases by medical gymnastics were attacked by cholera during the last epidemic at Vienna.

2. That of 242 cases of cholera amongst the Jews at Wisnitz, that were treated by frictions and other passive manipulations and some tincture, only two died. This result is ascribed to the manipulations. (The tincture is not specified.)

3. That several persons affected, during the last epidemic at Vienna, with the first symptoms of cholera, as spasms and vomiting, got rid of them by active prolonged exercise, till perspiration ensued. A gentleman, suffering from cholerine, got rid of the disease by riding on horseback till he and the horse were in full perspiration.

4. Two ladies, suffering from fear of catching cholera, and from sickness, cured themselves by active exercises at home, and by a long walk in the open air.

That some cases of developed asphyctic or paralytic cholera, in which the patients have been unable to to take any medicine, or have thrown up immediately the medicines taken, were still kept alive by the various passive manipulations. As, for instance—

1. Flexion and extension, stroking, gentle friction (with slight pressure on those parts of the body which are covered with thick layers of skin), rotation, kneading, and fulling of the limbs.

2. Stroking and friction of the back.

3. Chest vibration.

4. Artificial inspiratory and expiratory movements of the thorax.

5. Active inspiratory movements, if the patients have sufficient strength.

6. Compression of the stomach and loins, or of the whole abdomen.

7. Pressure on the solar nervous plexus.

As long as the patients could move, active and half active movements were combined with the passive manipulations, which form the most important part of the treatment. All these movements must be applied with perseverance, and executed skilfully and harmoniously. Medical gymnastics rouse the sinking vital power to new action, produce warmth, and reaction follows much sooner than after any other means. They are a powerful preventive and remedy, and act sooner than medicines, but do not exclude them; they are the only means to which we can resort when medicines cannot be taken, or are thrown up. In mentioning all these advanvantages, Melicher does not maintain that all cases of cholera are curable by the above-mentioned manipulations, but points out their importance in the prevention and treatment of this disease, as proved by the following case.

Mr. F., twenty-two years old, previously always in good health, was affected by cholera in November, 1854 (his mother having been attacked a day before by the most violent cholera), and was seized by sudden asphyctic cholera, with most violent and frightful general spasms. The unconscious

patient could take nothing; the medicines poured down his throat were thrown up, the stools involuntarily evacuated, and cerebral or pulmonary paralysis was every moment expected. Four men were scarcely able to keep him in bed during the spasmodic fits; only by stretching his limbs and the doubled-up trunk, by passive movements on the extremities, especially on the hands and feet, and on the trunk, was he kept in bed; the congestion to the head and chest and the terrible fits diminished, and the patient was again restored to animation. In many of the diseases after cholera medical gymnastics proved also very useful.

Melicher has submitted his views on the prevention and cure of cholera by medical gymnastics to the Austrian Board of Health, which will soon be published.

Mr. Daly, in his little pamphlet, "Prophylaxie et Curation du Choléra par le Mouvement," quotes from Prosper Alpinus, "De Medicina Ægyptiorum," that gentle concentric abdomen stroking and gentle pressure with both hands on the relaxed abdomen (hypochondria), and point pressure and point vibration with one finger, on the patient's navel, are most important in the cure of chronic dysentery. These manipulations Mr. Daly has seen efficacious in the premonitory symptoms of cholera in the preceding diarrhœa. To relieve the pain and spasms of the stomach during the attack itself, a stomach (or abdomen) vibration is made, while the abdominal integuments are in a state of relaxation. The spasms of the legs are treated by a strong circular compression made with two hands under the knee, or by a simultaneous compression under the knee and above the ankle. The cold and rigors are treated by general (longitudinal) point percussions made from the head downwards; by general vibrations made first on the shoulders, and then on the hips; by longitudinal downwards stroking, by transversal and spherical stroking, made with the palms of both hands, and by sawing movements. Also, abdominal fulling and abdominal kneading are used, which movements must be done gently.

The movements have been successfully employed in this class of diseases, which so often originate from bodily complaints and abnormal function of the nervous system. In the Lunatic Asylum at Sonnenstein, near Pirna, in Saxony, gymnastics have been introduced since 1848. The Austrian Government has ordered the introduction of medical gymnastics into the new Lunatic Asylum at Vienna, and Dr. Laehr has introduced it in a private asylum near Berlin. I am sorry to say that I have not found a description of the special treatment and prescriptions of movements used in the individual cases of mental affection, and therefore I restrict myself to the two following cases which have occurred in my own practice, and which prove how important and salutary the movements may become when applied to influence the mind.

Miss ——, sixteen years old, fair, large head, prominent eyes, regularly menstruated, was sent to my Institution for the awkwardness of her walk, stooping position, protrusion of the chin, and a slight spinal deviation. She was at home generally very obstinate, far behind in her education, and her mother and governess considered her not quite right in her head. I was told that I should find much difficulty in inducing her to do the suitable movements. Although I found at first some difficulty in making her understand the difference of action in the half active movements, she was soon accustomed to do the prescribed movements most willingly, not only at the Institution, but also to practise those which were to be done at home. She was six weeks under treatment, and improved considerably, not only bodily, but also in many respects mentally; her attention could be very well fixed, and the exactitude and precision necessary for a good execution of the movements was not wanting, and I remember that her friends expressed their astonishment at my being able to manage her so well. The treatment was interrupted in consequence of the family leaving town.

The second case was the following.

Mr. ——, eighteen years old, fair, tall, pale, sickly appearance, large head, high shoulders, narrow chest, round back, was affected with a lateral curvature of the spine to the right, with a slight twist to the left. He never looked any one in the face; was very shy; did not like to be in the presence of ladies; the features had the expression of unwillingness and discontent; was very fond of music, played the piano with much feeling; liked amusements, but could not be induced to occupy himself seriously with his studies, or to express any idea with regard to the choice of his future career; his voice was very low, and his body showed the want of that energy which is usual at his age. His position, when upright, was also very characteristic; he stood with the weight of the body on one leg, the hands always crossed before and on his stomach; the right shoulder higher than the left; the throat much shortened, head and chin being thrust forward, and the head inclining to one or the other side. No bad habit was the cause of this youth's condition. The parents were in despair, believing that a certain amount of idiocy and the want of mental development and bodily energy would be permanent.

When I began the treatment I was obliged to treat him alone (that is, not in the company of other patients). He did what I wished him to do; he never spoke except to express pain, as he was most sensitive when any of his numerous more or less contracted muscles or other parts were brought into a state of tension either by half active or the passive movements.

By degrees he improved; paid more attention during the treatment; did not object visiting the Institution at the same time as other gentlemen; was fond of coming to my house, and began to be aware that the movements had effect not only upon his body, but also on his mind; he left me after three months, considerably changed, and returned two or three times for a short period, to continue his treatment. The parents have repeatedly expressed their gratitude for the beneficial bodily and mental change of their son, who is now an assiduous student, and has exchanged his paleness, shyness, and

weakness for good colour, amiable disposition, and bodily and mental energy.

In both cases, the movements were chosen according to the various symptoms, and the mental change was a consequence of the improved bodily health. It is desirable that gentlemen at the head of lunatic asylums should not neglect such an important accessory means as medical gymnastics will undoubtedly prove in the hands of the intelligent physician. Professor Ideler and Dr. Melicher have published short but interesting papers on this subject.

The following prescriptions of Neumann serve as instances of the scientific application of movements for the development and improvement of various regions of the body, of various groups of muscles, and of the various joints; the instances of free exercises, or active movements without apparatus, act on the whole body, and at the same time more especially on certain parts.

To strengthen the pectoral muscles, to increase the convexity of the chest, and to throw the shoulder-blades back.

1. Rack close standing, alternate double arm extension (G.R. and P.R.)
2. Wing rack stride standing, alternate double arm extension (G.R. and P.R.)
3. Rack walk standing, alternate double arm extension (G.R. and P.R.)
4. Rack stride thigh lean fall standing, alternate double arm extension (G.R. and P.R.)
5. Rack reclined stride standing, alternate double arm extension (G.R. and P.R.)

6. Rack inclined walk standing, alternate double arm extension (G.R. and P.R.)

7. Rack stride deep crooked standing, alternate double arm extension (G.R. and P.R.)

8. Rack stretch stride standing, alternate double arm extension (G.R. and P.R.), with hand pulling.

9. Yard stride standing, double arm alternate flexion (G.R.) and extension (P.R.)

10. Yard stride reclined standing, double arm alternate flexion (G.R.) and extension (P.R.)

11. Yard stride twist standing, double arm alternate flexion (G.R.) and extension (P.R.) (right twist or left twist).

12. Yard stride deep crooked standing, double arm alternate flexion (G.R.) and extension (P.R.)

13. Yard stride right oblique (left oblique) standing, double arm alternate flexion (P.R.) and extension (G.R.)

14. Rack stride right twist (left twist) standing, double arm alternate extension (G.R. and P.R.)

15. Span rack close standing, alternate arm extension (P.R. and G.R.) (right span left rack and left span right rack).

16. Heave grasp rack close standing, alternate arm extension (P.R. and G.R.) (right heave grasp left rack or left heave grasp right rack).

17. Yard grasp yard close standing, alternate arm flexion (G.R.) and extension (P.R.) (right yard grasp left yard or left yard grasp right yard).

To strengthen the muscles of the shoulder-blades and the lateral muscles of the trunk, and to increase the convexity of the chest.

1. Stretch close standing, alternate double upper and forearm flexion (G.R.) and extension (P.R.)

2. Stretch stride standing, alternate double upper and forearm flexion (P.R.) and extension (G.R.)

3. Stretch wing walk standing, alternate upper and fore

arm flexion (G.R.) and extension (P.R.) (right stretch left wing right walk, or right stretch left wing left walk).

4. Stretch wing stride standing, alternate upper and forearm flexion (P.R.) and extension (G.R.)

5. Stretch stride fall thigh lean standing, alternate double upper and forearm flexion (G.R.) and extension (P.R.)

6. Stretch inclined right (left) pass standing, alternate double upper and forearm flexion (P.R.) and extension (G.R.)

7. Stretch span deep crooked standing, alternate double upper and forearm flexion (G.R.) and extension (P.R.)

8. Stretch walk standing, alternate upper and forearm flexion (G.R.) and extension (P.R.), with hand pulling (right stretch right walk left hand pulling, or right stretch left walk left hand pulling).

9. Stretch yard close standing, upper and forearm flexion (G.R.) and extension (G.R.) (right stretch left yard right upper and forearm flexion).

10. Defence stride standing, alternate double upper and forearm extension (P.R.) and flexion (G.R.)

To strengthen the muscles which raise the arm up into stretch position, and move it downwards from this position.

1. Speak close standing, alternate double arm sideways upwards guiding (G.R.) and sideways downwards guiding (G.R.)

2. Stretch stride standing, alternate double arm sideways downwards guiding (P.R.) and sideways upwards guiding (G.R.)

3. Stretch wing walk standing, alternate arms sideways and downwards guiding (P.R.) and sideways upwards guiding (G.R.) (right stretch left wing right walk, or right stretch left wing left walk).

4. Wing speak stride standing, alternate arm sideways and upwards guiding (G.R.) and sideways downwards guiding (P.R.)

5. Wing speak twist stride standing, alternate arm side-

ways upwards guiding (G.R.) and sideways downwards guiding (G.R.) (right speak left wing right twist, or right speak left wing left twist).

6. Wing stretch twist close standing, alternate arm sideways downwards guiding (G.R.) and sideways upwards guiding (G.R.) (right stretch left wing right (left) twist).

7. Wing speak twist stride standing, alternate arm sideways upwards guiding (P.R.) and sideways downwards guiding (G.R.) (right speak left wing right (left) twist).

8. Speak inclined stride standing, alternate double arm sideways upwards guiding (P.R.) and sideways downwards guiding (G.R.)

9. Stretch fall close standing, alternate double arm sideways downwards guiding (P.R. and G.R.)

To strengthen the exterior muscles of the lower extremities.

1. High peg grasp standing, alternate leg sideways raising (G.R.) and sideways down pressure (P.R.)

2. High peg grasp wave standing, alternate leg sideways down pressure (P.R.) and sideways raising (G.R.)

3. Heave grasp standing, alternate leg sideways raising (G.R.) and down pressure (P.R.)

4. Heave grasp wave standing, alternate leg sideways down pressure (P.R.) and sideways raising (G.R.)

5. Span standing, alternate leg sideways raising (G.R.) and sideways downwards pressure (P.R.)

6. Span stride wave standing, alternate leg sideways down pressure (P.R.) and sideways raising (G.R.)

7. Span speak grasp standing, alternate leg sideways raising (G.R.) and sideways downwards pressure (P.R.) (right span left speak grasp (right) left leg sideways raising).

8. Span yard grasp wave standing, alternate leg sideways down pressure (P.R.) and sideways raising (G.R.) (right span left yard grasp right left wave).

To strengthen the anterior muscles of the lower extremities.

1. High peg grasp swing standing, leg alternate forwards pulling (G.R.) and backwards pulling (P.R.)

2. High peg grasp kick standing, alternate leg backwards pulling (P.R.) and forwards pulling (G.R.)

3. Heave grasp swing standing, leg alternate forwards pulling (G.R.) and backwards pulling (P.R.)

4. Heave grasp kick standing, leg alternate backwards pulling (P.R.) and forwards pulling (G.R.)

5. Span swing standing, leg alternate forwards pulling (G.R.) and backwards pulling (P.R.)

6. Span kick standing, leg alternate backwards pulling (P.R.) and forwards pulling (G.R.)

7. Yard grasp swing standing, leg alternate forwards pulling (G.R.) and backwards pulling (P.R.)

8. Span speak grasp kick standing, leg alternate backwards pulling (P.R.) and forwards pulling (G.R.) (right span left speak grasp left kick, or right span left speak grasp right kick).

9. Yard grasp speak grasp swing standing, leg alternate forwards pulling (G.R.) and backwards pulling (P.R.) (right yard grasp left speak grasp, left (right) swing).

10. Speak grasp kick standing, leg alternate backwards pulling (P.R.) and forwards pulling (G.R.)

11. Speak grasp swing standing, alternate leg forwards pulling (G.R.) and backwards pulling (P.R.)

12. Span yard grasp kick standing, leg alternate backwards pulling (P.R.) and forwards pulling (G.R.) (right span left yard grasp left (right) kick).

13. Span yard grasp swing standing, alternate leg forwards pulling (G.R.) and backwards pulling (P.R.) (right span left yard grasp left or right swing).

To strengthen the posterior muscles of the lower extremities.

1. High peg grasp kick standing, leg alternate backwards pulling (G.R.) and forwards pulling (P.R.)

2. High peg grasp swing standing, alternate leg forwards pulling (P.R.) and backwards pulling (G.R.)

3. Heave grasp kick standing, leg alternate backwards pulling (G.R.) and forwards pulling (P.R.)

4. Heave grasp swing standing, leg alternate forwards pulling (P.R.) and backwards pulling (G.R.)

5. Heave grasp speak grasp kick standing, leg alternate backwards pulling (G.R.) and forwards pulling (P.R.) (right heave grasp left speak grasp left right kick).

6. Heave grasp span kick standing, alternate leg backwards pulling (G.R.) and forwards pulling (P.R.) right heave grasp left span left or right kick).

7. Span speak grasp kick standing, leg alternate backwards pulling (G.R.) and forwards pulling (P.R.) (right span left speak grasp left or right kick.

8. Span swing standing, leg alternate forwards pulling (P.R.) and backwards pulling (G.R.)

9. Span kick standing, leg alternate backwards pulling (G.R.) and forwards pulling (P.R.)

To strengthen the interior muscles of the lower extremities.

1. High peg grasp wave standing, leg alternate sideways down pressure (P.R.) and sideways raising (G.R.)

2. High peg grasp standing, leg alternate sideways raising (P.R.) and down pressure (G.R.)

3. Heave grasp wave standing, leg alternate sideways down pressure (G.R.) and sideways raising (P.R.)

4. Heave grasp speak grasp standing, leg alternate sideways raising (P.R.) and down pressure (G.R.)

5. Span wave standing, leg alternate sideways down pressure (G.R.) and sideways raising (P.R.)

6. Yard grasp standing, leg alternate sideways raising (P.R.) and sideways down pressure (G.R.)

To strengthen the interior and exterior muscles of the lower extremities.

1. High peg grasp wave standing, leg alternate sideways down pressure (G.R.) and sideways raising (G.R.)

2. Heave grasp wave standing, leg alternate sideways down pressure (P.R.) and sideways raising (P.R.)

3. Speak grasp wave standing, leg alternate sideways down pressure (P.R. and G.R.)

4. High peg grasp standing, leg alternate sideways raising (P.R. and G.R.)

5. Span wave standing, leg alternate sideways down pressure (P.R.) and sideways raising (P.R.)

6. Span speak grasp standing, leg alternate sideways raising (G.R. and P.R.) (right span left speak grasp left leg sideways raising, or right span left speak grasp right leg sideways raising).

7. Span yard grasp wave standing, leg alternate sideways down pressure (P.R.) and sideways raising (P.R.) (right span left yard grasp left right wave).

8. Heave yard grasp standing, leg alternate sideways raising (G.R.) and sideways down pressure (G.R.) (right heave grasp left yard grasp left (right) leg.)

To strengthen the anterior and posterior muscles of the lower extremities.

1. High peg grasp kick (swing) standing, leg alternate backwards pulling (G.R.) and forwards pulling (G.R.)

2. Heave grasp kick (swing) standing, leg alternate backwards pulling (P.R.) and forwards pulling (P.R.)

3. Yard grasp kick standing, leg alternate backwards pulling (P.R. and G.R.)

4. Span swing standing, leg alternate forwards pulling (G.R. and P.R.)

5. Heave grasp speak grasp kick (swing) standing, leg

alternate backwards pulling (P.R.) and forwards pulling (P.R.) (right heave grasp left speak grasp left or right kick (swing).

6. Span speak grasp kick (swing) standing, leg alternate backwards pulling (G.R.) and forwards pulling (G.R.) (right span left speak grasp left or right kick (swing).

To strengthen the muscles which twist the lower extremities outwards.

1. High peg grasp kick standing, leg alternate outwards twisting (G.R. and P.R.)

2. High peg grasp wave standing, leg alternate outwards twisting (G.R. and P.R.)

3. Heave grasp swing standing, leg alternate outwards twisting (P.R. and G.R.)

4. Span kick standing, leg alternate inwards twisting (P.R.) and outwards twisting (G.R.)

5. Yard grasp wave standing, leg alternate inwards twisting (G.R.) and outwards twisting (P.R.)

6. Span swing standing, leg alternate outwards twisting (P.R. and G.R.)

7. Heave grasp heel standing, leg alternate outwards twisting (G.R. and P.R.)

To strengthen uniformly the muscles which twist the leg inwards and outwards.

1. High peg grasp kick standing, leg alternate outwards twisting (G.R.) and inwards twisting (G.R.)

2. Heave grasp wave standing, leg alternate outwards twisting (P.R.) and inwards twisting (P.R.)

3. Yard grasp swing standing, leg alternate inwards twisting (G.R.) and outwards twisting (G.R.)

4. Span kick standing, leg alternate outwards twisting (P.R.) and inwards twisting (P.R.)

5. Heave grasp speak grasp wave standing, leg alternate

outwards twisting (P.R.) and inwards twisting (P.R.) (right heave grasp left speak grasp left (right) wave).

6. Speak grasp swing standing, leg alternate outwards twisting (G.R.) and inwards twisting (G.R.)

To increase the strength of the anterior muscles of the thigh.

1. Heave grasp squat standing, knee alternate down pressure (P.R.) and raising (G.R.)

2. Yard grasp standing, knee alternate raising (G.R.) and down pressure (P.R.)

3. Span reclined squat standing, knee alternate down pressure (P.R.) and raising (G.R.)

4. Span yard grasp standing, knee alternate raising (G.R.) and down pressure (P.R.) (right span left yard grasp left (right) knee).

To strengthen the posterior muscles of the thigh.

1. High peg grasp squat standing, knee alternate down pressure (G.R.) and raising (P.R.)

2. Heave grasp standing, knee alternate raising (P.R.) and down pressure (G.R.)

3. Span standing, knee alternate raising (P.R.) and down pressure (G.R.)

4. Heave grasp speak grasp squat standing, knee alternate down pressure (G.R.) and raising (P.R.) (right heave grasp left speak grasp left (right) squat).

To strengthen the interior and exterior muscles of the thigh.

1. Squat half lying, double knee alternate separation (G.R.) and adduction (G.R.)

2. Squat half lying, double knee alternate separation (P.R.) and adduction (P.R.)

3. Squat stride lying, double knee alternate adduction (P.R. and G.R.)

4. Squat half lying, double knee alternate separation (G.R. and P.R.)

To strengthen the anterior muscles of the leg and foot.

1. Half lying, leg alternate flexion (P.R.) and extension (G.R.)

2. Air half lying, leg alternate extension (G.R.) and flexion (P.R.)

3. Forwards lying, leg alternate flexion (P.R.) and extension (G.R.)

4. Forwards lying, double leg alternate flexion (P.R.) and extension (G.R.)

5. Forwards air lying, double leg alternate extension (G.R.) and flexion (P.R.)

6. Forwards air lying, double leg extension (G.R.) and flexion (P.R.)

To strengthen the posterior muscles of the leg and foot.

1. Half lying, leg alternate flexion (G.R.) and extension (P.R.)

2. Air half lying, leg alternate extension (P.R.) and flexion (G.R.)

3. Forwards air lying, leg alternate extension (P.R.) and flexion (G.R.)

4. Forwards air lying, leg alternate flexion (G.R.) and extension (P.R.)

5. Forwards air lying, double leg alternate extension (P.R.) and flexion (G.R.)

6. Forwards lying, double leg flexion (G.R.) and extension (P.R.)

LIBRARY

To strengthen the anterior and posterior muscles of the leg and foot.

1. Half lying, leg alternate flexion (G.R.) and extension (G.R.)
2. Half lying, leg alternate flexion (P.R.) and extension (P.R.)
3. Air half lying, leg alternate extension (P.R. and G.R.)
4. Half lying, leg alternate flexion (P.R. and G.R.)
5. Forwards air lying, double leg alternate extension (P.R. and G.R.)
6. Forwards air lying, double leg alternate extension (P.R.) and flexion (P.R.)
7. Forwards air lying, double leg alternate extension (G.R.) and flexion (G.R.)
8. Forwards lying, leg double alternate flexion (P.R. and G.R.)

To strengthen the muscles of the back part of the head and neck, and to counteract the inclination of the head forwards.

1. Stride wing standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)
2. Close swing standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)
3. Twist swing stride standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.) (right twist or left twist).
4. Heave grasp close standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)
5. Speak grasp stride standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)
6. Yard grasp close standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)
7. Span walk standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.) (right walk or left walk).

8. Heave grasp speak grasp close standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

9. Heave grasp yard grasp close standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

10. Star grasp stride standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

11. Span speak grasp close standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

12. Stretch stride standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

13. Yard stride standing, head alternate forwards flexion (P.R.) and backwards flexion (G.R.)

To strengthen the posterior trunk muscles, and to prevent the trunk from stooping forwards.

1. Wing fall stride thigh opposite standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

2. Wing stride fall standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

3. Rest fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

4. Yard wing fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.) (right yard left wing or left yard right wing).

5. Yard fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

6. Rest fall stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

7. Shelter fall stride thigh opposite standing, trunk alternate forwards pressure (P.R.) and backwards pressure (G.R.)

8. Stretch fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards pressure (G.R.)

9. Stretch rest fall thigh opposite close standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.) (right stretch left rest and left stretch right rest).

10. Stretch angle fall thigh opposite close standing, trunk

alternate forwards pressure (P.R.) and backwards flexion (G.R.) (right stretch left angle and left stretch right angle).

11. Rest twist fall stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.) (right twist and left twist).

12. Stretch yard fall stride thigh opposite standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.) (right stretch left yard and left stretch right yard).

13. Star fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

14. Heave fall thigh opposite stride standing, trunk alternate forwards pressure (P.R.) and backwards flexion (G.R.)

To strengthen the muscles of the anterior and posterior sides of the trunk, to increase the antagonistic action between the abdominal muscles and those of the back, and to produce a firm upright posture.

1. Rest fall (inclined) thigh opposite stride standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.)

2. Rest fall (inclined) stride standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.)

3. Yard wing fall (inclined) close thigh opposite standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.) (right yard left wing and left yard right wing).

4. Yard wing fall (inclined) stride standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.) (right yard left wing and left yard right wing).

5. Yard fall (inclined) close thigh opposite standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.)

6. Stretch fall (inclined) stride standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.)

7. Rest fall (inclined) stride thigh opposite standing, trunk

alternate forwards pressure (P.R.) and backwards pulling (P.R.)

8. Rest fall (inclined) stride standing, trunk forwards pressure (P.R.) and backwards pulling (P.R.)

9. Star fall (inclined) thigh opposite close standing, trunk alternate forwards pressure (P.R.) and backwards pulling (P.R.)

10. Rest twist fall (inclined) stride thigh opposite standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.) (right or left twist).

11. Yard wing twist fall (inclined) stride thigh opposite standing, trunk alternate forwards pressure (P.R.) and backwards pulling (P.R.) (right yard left wing and right (left) twist, and left yard right wing right (left) twist).

12. Stretch yard twist fall (inclined) stride thigh opposite standing, trunk alternate forwards inclination (G.R.) and backwards flexion (G.R.) (right stretch left yard right (left) twist, and left stretch right yard right (left) twist).

To strengthen the lateral muscles of the trunk.

1. Rest walk hip lean oblique standing, alternate sideways flexion (G.R.) and sideways pulling (P.R.) (right walk right hip lean left oblique) right sideways flexion and right sideways pulling.

2. Stretch stride standing, alternate sideways flexion (P.R.)

3. Rest stride standing, ideways alternate pulling (P.R.)

4. Stretch yard walk hip lean oblique standing, alternate sideways flexion (G.R.) and sideways pulling (P.R.) (right stretch left yard left walk left hip lean right oblique left sideways flexion and left sideways pulling, or left stretch right yard right walk and right hip lean left oblique right sideways flexion and right sideways pulling).

5. Yard stride standing, alternate trunk sideways flexion (G.R.)

6. Stretch stride standing, alternate trunk sideways pulling (P.R.)

7. Heave stride standing, alternate trunk sideways flexion (G.R.)

8. Stretch angle stride standing, alternate sideways pulling (P.R.) (right stretch left angle and left stretch right angle).

To strengthen the muscles which twist the trunk.

1. Rest stride twist standing, alternate trunk forwards twisting (G.R. and P.R.) (right or left twist).

2. Yard wing stride thigh lean twist standing, alternate trunk forwards and backwards twisting (G.R.) (right yard left wing right twist and left yard right wing left twist).

3. Yard stretch close thigh lean twist standing, trunk alternate forwards and backwards twisting (P.R.) (right yard left stretch right twist).

4. Rest yard stride thigh lean twist standing, alternate trunk forwards twisting (G.R.) and backwards twisting (P.R.) (right rest left yard left twist).

5. Yard angle twist stride thigh lean standing, alternate trunk forwards twisting (P.R.) and backwards twisting (G.R.) (right yard left angle right twist).

6. Span yard reclined stride twist standing, alternate trunk forwards twisting (G.R.) and backwards twisting (P.R.) (right span left yard left twist).

To strengthen the shoulder-joint.

1. Yard lean stride standing, double arm rotation, with pulling.

2. Star lean stride standing, double arm rotation, with pulling.

3. Speak lean stride standing, double arm rotation, with pulling.

4. Rack lean stride standing, double arm rotation, with pulling.

5. Yard wing lean stride standing, arm rotation, with pulling.

6. Star wing lean stride standing, arm rotation, with pulling.

7. Speak wing lean stride standing, arm rotation, with pulling.

8. Rack wing lean stride standing, arm rotation, with pulling.

9. Yard half lying, double arm rotation, with pulling.

10. Star half lying, double arm rotation, with pulling.

11. Rack lying, double arm rotation, with pulling.

To strengthen the elbow-joint.

1. Heave stride lean standing, double forearm alternate inwards and outwards twisting, with pulling.

2. Heave elbow support sitting, double forearm alternate inwards and outwards twisting, flexion and extension, with pulling.

To strengthen the wrist-joint.

1. Speak lean stride standing, double hand rotation, with pulling.

2. Yard lean stride standing, double hand rotation, with pulling.

3. Star half lying, double hand rotation, with pulling.

To strengthen the hip-joint.

1. Half lying, hip rotation, with pulling.

2. Stretch trunk lying, hip rotation, with foot and double hand pulling.

3. Span hanging, hip rotation, with pulling.

To strengthen the knee-joint.

1. Squat lying, leg alternate outwards and inwards twisting, with pulling.

2. Forwards air lying, leg alternate outwards and inwards twisting, flexion, and extension with pulling.

To strengthen the ankle-joint.

Half lying, double foot rotation, flexion, and extension.

The following seven prescriptions of free exercises* have, according to Neumann, one common effect of developing the simultaneous action of the tendinous tissues throughout the body, and of making the circulation more uniform. The other effects are mentioned at the head of each prescription.

To develope the simultaneous action of the muscles of the foot, leg, and thigh, or to make the circulation more uniform throughout one foot or leg.

1. Wing right kick standing, holding.
2. Speak left kick standing, holding.
3. Yard right squat standing, holding.
4. Yard wing left squat standing, holding (right yard left wing left squat and left yard right wing left squat).
5. Rest right wave standing, holding.
6. Rest wing left wave standing, holding (right rest left wing left wave and left rest right wing left wave).
7. Stretch right swing standing, holding.
8. Rest stretch left swing standing holding (right rest left stretch left swing, and left rest right stretch left swing).
9. Stretch yard right step standing, holding (right stretch left yard right step and left stretch right yard right step).
10. Shelter left step standing, holding.

* See second edition of my translation of "Ling's Gymnastic Free Exercises," by Rothstein. Groombridge and Sons; London, 1855.

11. Heave right kick standing, active foot rotation.

12. Stretch angle left kick standing, active foot rotation (right stretch left angle left kick and left stretch right angle left kick).

13. Stretch think right wave standing, active foot flexion and extension (right stretch left think right wave and left stretch right think right wave).

14. Yard right squat standing, active leg flexion and extension.

15. Defence left squat standing, active leg outwards and inwards twisting.

16. Think left wave standing, active leg outwards and inwards twisting,

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To develope the combined action of the tendinous textures on the anterior side of the body, or to equalize the circulation more directly in that side of the body.

1. Wing stride fall standing, holding.
2. Wing close reclined standing, holding.
3. Yard stride reclined standing, holding.
4. Star close reclined, standing, holding.
5. Stretch stride reclined standing, holding.
6. Wing right twist stride reclined standing, holding.
7. Yard left twist stride reclined standing, holding.
8. Yard angle right twist stride reclined standing, holding.
9. Stretch yard left twist stride reclined standing, holding.
10. Rest right twist stride reclined standing, holding.
11. Span reclined left twist stride standing, holding.
12. Rest stretch right twist close reclined standing, holding.
13. Span stride reclining, holding.
14. Stretch stride reclining, holding.
15. Yard stride reclining, holding.

To develope the combined action of the tendinous tissues of the posterior half of the body, or to equalize the circulation more directly in that half of the trunk.

1. Wing close inclining, holding.
2. Yard wing close inclined standing, holding (right yard left wing and left yard right wing).
3. Heave inclined close standing, holding.
4. Rest inclined close standing, holding.
5. Stretch inclined close standing, holding.
6. Stretch yard inclined close standing, holding (right stretch left yard and left stretch right yard).
7. Yard inclined right twist close standing, holding.
8. Stretch inclined left twist stride standing, holding.
9. Yard inclined right pass standing, holding.
10. Stretch inclined left pass standing, holding.
11. Rest inclined right twist left pass standing, holding.
12. Yard crooked close standing, holding.
13. Rest close deep crooked standing, holding.
14. Wing close acute crooked standing, holding.
15. Yard close acute crooked standing, holding.
16. Span close acute crooked standing, holding.

To develope more directly the tendinous tissues of the right half of the trunk, and to equalize the circulation more directly in the right half of the trunk.

1. Wing stride left oblique standing, holding.
2. Speak stride left oblique standing, holding.
3. Right yard left wing close left oblique standing, holding.
4. Left yard right wing close left oblique standing, holding.

5. Yard span left oblique standing, holding.

6. Star close left oblique standing, holding.

7. Rest stride left oblique standing, holding.

8. Yard stride left twist left oblique standing, holding.

9. Yard stride right twist left oblique standing, holding.

10. Heave stretch close left oblique standing, holding (right heave left stretch and left heave right stretch).

11. Rest left oblique left squat standing, holding.

12. Stretch left oblique right squat standing, holding.

13. Stretch angle left oblique right step standing, holding (right stretch left angle and left stretch right angle).

14. Yard angle left oblique left step standing, holding (right yard left angle and left yard right angle).

To strengthen the muscles of the hand, and more directly to draw the blood to the hand.

1. Right yard left wing close standing, active right hand rotation.

2. Left yard right wing close standing, active left hand rotation.

3. Right yard left wing close standing, active alternate right hand abduction and adduction.

4. Left heave right wing walk standing, active alternate left hand adduction and abduction.

5. Right stretch left wing stride standing, active right hand rotation.

6. Left stretch right wing stride standing, active alternate hand flexion and extension.

7. Rest star left wing close standing, active alternate right hand adduction and abduction.

8. Left yard right wing close standing, active left hand rotation.

9. Right flight left wing close standing, active alternate right hand flexion and extension.

To strengthen the muscles of one hand and one forearm, and to draw the blood to one arm.

1. Right yard left wing stride standing, right forearm alternate active flexion and extension.
2. Left yard right wing close standing, left forearm alternate active flexion and extension.
3. Right speak left wing walk standing, right forearm alternate active flexion and extension.
4. Left speak right wing stride standing, left forearm alternate active flexion and extension.
5. Right rack left wing right oblique stride standing, right forearm alternate active flexion and extension.
6. Left heave right wing left oblique stride standing, left forearm alternate active outwards and inwards twisting.
7. Right heave left wing left twist stride standing, right forearm alternate active outwards and inwards twisting.
8. Right stretch left wing right twist stride standing, right forearm alternate active flexion and extension.

To strengthen the muscles of one arm and shoulder and the corresponding pectoral muscles, and to draw the blood to one arm and the corresponding half of the chest.

1. Right yard left wing stride standing, right arm alternate active flexion and extension.
2. Left yard right wing stride standing, left arm alternate active flexion and extension.
3. Right star left wing stride standing, right arm active rotation.
4. Left star right wing stride standing, left arm active rolling.

[In order to show what diseases have been treated hitherto by medical gymnastics on the Continent, I add the following tables. As far as I know, no others have been hitherto published, with the exception of one by Mr. Georgii, in his "Kinesipathy," and another by myself, in the translation of "Gymnastic Free Exercises."]

DR. NEUMANN'S INSTITUTION AT BERLIN.

From February 7 to December 31, 1853.

Name of Disease.	No. of Patients.
Deformities of the spine	37
Deformities of the arms and legs	3
Paralysis (central and peripheric)	20
Consumption	5
Chronic diseases of the heart	3
Asthma and pulmonary emphysema	4
Ruptures	7
Various abdominal complaints with constipation	23
St. Vitus's dance	3
General varicosity, especially venous varices and venous plethora, on the abdomen and legs	2
Developed neuralgia	5
Diseases of irregular menstruation	6
Idiocy and mania	2
Amaurosis	1
Deafness	1
Total	122

DR. NEUMANN'S INSTITUTION AT BERLIN.

From January, 1854, *to January,* 1855.

Name of Disease.	No. of Patients.
Spinal curvatures	58
Abdominal complaints, especially constipation	22
Disease of the chest, consumption, and pulmonary emphysema	16
Paralysis	23
Ruptures	10
Deformities of the legs	11
Mental diseases	3
Caries of the thigh-bone	1
Diseases of the menstruation, and chlorosis	10
Chronic inflammation of the eyes	11
Neuralgia and spasms	11
Scrofula	2
Organic diseases of the heart	4
Deafness	3
Coxarthrocace	2
Writing spasm	3
Total	190

DR. MELICHER'S INSTITUTION AT VIENNA.

From August 15 *to the end of December*, 1852.

Name of Disease.	Admitted.	Cured.	Improved.	Not cured.	Interrupted treatment; without result.	Remained under treatment.
Swelling (physconia) of the liver and spleen..	1	1	...	...	...	...
Predisposition to phthisis (habitus phthisicus)	1	1	...	...	...	...
Tubercular phthisis (first and second degree)	3	...	2	...	...	1
Scrofula	3	2	...	...	...	1
Rickets	1	1	...	...	...	...
Chlorosis	1	...	...	...	...	1
Dropsy	1	...	...	...	1	...
Serous exudation into the cavity of the chest	1	1	...	...	...	...
Metrorrhagia, with prolapsus (sinking)	1	1	...	...	...	...
Anæmia	1	...	...	...	1	...
Spermatorrhœa	3	2	...	...	1	...
Blood-spitting	2	1	...	...	...	1
Piles	1	...	...	...	...	1
Gout	1	1	...	...	...	...
Tabes mesenterica	2	1	...	...	1	...
Tabes dorsalis	1	...	...	...	...	1
Cephalalgia	2	1	...	...	...	1
Pain of the fifth nerve	1	...	...	...	...	1
Epilepsy	2	1	...	...	1	...
Hypochondriasis	2	...	...	...	...	2
Hysterics	1	...	...	...	...	1
Spasms of the calf of the leg	1	1	...	...	...	...
Paralysis of the lower extremities	3	1	...	...	1	1
Hemiplegia, with stiffness of the joints	2	1	...	...	...	1
Chicken-breast	2	2	...	...	...	...
Lateral curvature of the spine (scoliosis)	12	3	...	...	...	9
Curvature of the spine backwards (kyphosis)	5	1	2	...	1	1
Contraction of the hip-joint	1	1	...	...	...	...
Contraction of the knee	3	2	1	...	...	...
Deformity of the hip and knee	1	...	...	...	...	1
Deformity of the foot	2	...	1	...	...	1
Coxalgia	2	...	...	...	...	2
Inwards twisting of the knee (genu valgum)	1	1	...	...	...	...
	67	27	6	...	7	27

DR. MELICHER'S INSTITUTION AT VIENNA.

From January 1 *to the end of December,* 1853.

Name of Disease.	Remained under treatment from 1852.	Admitted, 1853.	Cured.	Improved.	Not cured.	Died.	Interrupted treatment; without result.	Under treatment, 1853.
Wry neck	...	2	1	1	...	...	...	...
Deformity of the thorax	...	7	5	1	...	...	1	...
Deformity of the spine (backwards)	1	6	1	4	...	...	1	1
Lateral curvature of the spine	9	34	21	10	...	...	4	8
Deformity of the fingers	...	3	2	...	...	...	1	...
Deformity of the hip-joint, knee, and foot	1	1	1	1	...	...	...	...
Deformity of the knee-joint	...	1	1	...	...	...	...	...
Inwards twisting of the knee (genu valgum)	...	2	2	...	...	...	...	...
Deformity of the foot	1	...	1	...	...	...	...	...
Club foot	...	2	2	...	...	...	...	...
Coxalgia	2	3	2	2	...	...	1	...
Laryngitis (chronic)	...	1	1	...	...	...	...	...
Predisposition to phthisis	...	3	2	...	...	...	...	1
Beginning of phthisis	1	4	1	2	...	1	1	...
Asthma (emphysema pulmonum)	...	2	1	...	...	...	1	...
Blood-spitting	1	3	4	...	...	...	...	...
Chlorosis	1	1	1	...	...	...	1	...
Scrofula	1	2	3	...	...	...	...	...
Rickets	...	2	1	...	...	...	1	...
Bad digestion	...	3	2	...	...	...	1	...
Colica flatulenta	...	1	1	...	...	...	...	...
Diarrhœa chronica	...	3	1	1	...	...	...	1
Piles	1	1	2	...	...	...	...	...
Goitre	...	1	...	1	...	...	...	...
Fatness	...	2	2	...	...	...	...	...
Carcinomatous formation	...	3	1	1	...	...	1	...
Giddiness	...	1	...	...	...	...	...	1
Cephalalgia	1	5	3	2	...	...	...	1
Pain of the fifth nerve	1	...	1	...	...	...	...	...
Idiocy	...	4	...	2	...	...	2	...
Hypochondriasis	2	...	1	1	...	...	...	...
Hysteria	1	2	2	...	1	...	...	...
Sciatica	...	1	1	...	...	...	...	...
Stammering	...	1	...	...	...	...	...	1
Spasms (general)	...	3	2	1	...	...	...	...
St. Vitus's dance	...	2	2	...	...	...	...	...
Tabes dorsalis	1	...	...	1	...	...	...	...
Muscular weakness (general)	...	2	1	...	...	...	1	...
Paralysis of the acoustic nerve	...	1	...	...	1	...	...	...
Hemiplegia	1	6	3	2	...	...	...	2
Paralysis of the upper extremities	...	2	1	...	...	...	...	1
Paralysis of the lower extremities	1	4	2	2	...	...	...	1
	27	127	81	35	2	1	17	18

DR. MELICHER'S INSTITUTION AT VIENNA.

From January 1 *to the end of December*, 1854,

Name of Disease.	Remained under treatment, 1853.	Admitted, 1854.	Cured.	Improved.	Not cured.	Interrupted treatment; without result.	Remained under treatment, 1854.
Deformity of the thorax	...	3	3	...	...	...	...
Lateral curvature of the spine	8	39	28	11	...	...	8
Curvature of the spine (backwards)	1	12	2	8	...	...	3
Lateral inclination of the head (caput obstipum)	...	1	1	...	...	...	...
Contraction of the elbow-joint	...	3	2	1	...	...	...
Contraction of the knee-joint	...	1	...	1	...	...	...
Deformity of the foot	...	2	2	...	...	...	...
Club foot	...	1	...	...	...	...	1
Flat foot	...	3	2	...	...	...	1
Inwards twist of the knee	...	2	2	...	...	...	...
Coxalgia	...	2	1	1	...	...	...
Stiffness of the elbow-joiut	...	1	1	...	...	...	...
Stiffness of the wrist-joint	...	1	1	...	...	...	...
Inguinal rupture	...	1	1	...	...	...	...
Furuncles	...	1	1	...	...	...	...
Laryngitis chronica	...	2	1	...	...	...	1
Predisposition to consumption	1	...	1	...	...	...	...
Commencing consumption	...	2	1	1	...	...	...
Serous exudation into the cavity of the chest	...	1	1	...	...	...	...
Scrofula	...	3	2	...	...	...	1
Vomiting (chronic)	...	1	1	...	...	...	...
Bad digestion	...	3	3	...	...	...	...
Colica flatulenta	...	2	1	...	...	...	1
Constipation (habitual)	...	3	3	...	...	...	...
Diarrhœa (habitual)	1	...	1	...	...	...	...
Abdominal plethora and piles	...	3	2	...	...	1	...
Nervous debility	...	2	1	1	...	...	...
Amaurosis	...	1	...	...	1	...	...
Giddiness	1	3	2	2	...	...	...
Headache (chronic and habitual)	1	2	3	...	...	...	...
Difficulty of hearing	...	1	...	1	...	...	...
General spasms	...	4	1	1	...	1	1
Sciatica	...	1	1	...	...	...	...
Tabes dorsalis	...	2	...	2	...	...	...
Stammering	1	1	2	...	...	...	...
Idiocy	...	2	...	2	...	...	...
Hemiplegia	2	5	4	3	...	...	...
Paralysis of the upper extremities	1	1	2	...	...	...	...
Paralysis of the lower extremities	1	2	1	2	...	...	...
Paralysis of all the limbs	...	3	...	3	...	...	...
	18	123	81	40	1	2	17

DR. MÜNCHENBERG'S INSTITUTION AT KÖNIGSBERG.

Females treated in 1854.

Name of Disease.	No. of Patients.
Lateral curvature of the spine to the right	14
Scoliosis sinistra	1
Lateral curvature of the spine to the right and curvature backwards	2
Lateral curvature of the spine to the right, and chlorosis	2
Lateral curvature of the spine to the right, and cardialgia	1
Scoliosis dextra and cardialgia	1
General muscular weakness	3
Chlorosis and intestinal phthisis	1
Chlorosis and cardialgia	1
Hysteria and piles	2
Epilepsy	1
Irritatio nervi vagi	1
Paraplegia of the lower extremities, especially of the glutæi	1
Total	31

DR. MÜNCHENBERG'S INSTITUTION AT KÖNIGSBERG.

Males treated in 1854.

Name of Disease.	No. of Patients.
General muscular weakness	6
General muscular weakness and chlorosis	2
Lateral curvature of the spine, and scoliosis	2
Piles	4
Hypochondriasis	2
Hypochondriasis, with constipation, liver complaint, cardialgia, and cold feet	1
Chronic rheumatisms	1
Ascites	1
Paralysis of the left side	1
Paralysis of the left side, and epilepsy	1
Paraplegia of the lower extremities	1
Irritatio spinalis	1
Epilepsy	1
Irritatio nervi vagi	1
Emphysema pulmonum	1
Catarrhus vesicæ urinariæ (chronic)	1
Chronic inflammation of the tarsal bones of the foot	1
Contraction of the left knee	1
Curvature of the spine (backwards)	1
Habitus phthisicus (narrow chest)	1
Total	31

MR. NITZSCHE'S INSTITUTION AT FRIEBERG, SAXONY.

From July 1, 1853, *to December* 31, 1854.

Name of Disease.	No. of Patients.			Cured.	Improved.	Under Treatment.		
	Males.	Females.	Total.			Males.	Females.	Total.
Lateral curvature of the spine	6	15	21	12	4	2	3	5
Kyphosis (humpback)	1	7	8	1	3	...	4	4
Contraction of the hip	1	2	3	1	1	...	1	1
Contraction of the neck.....	...	1	1	1	...	...	...	...
Asthma	1	2	3	2	...	...	1	1
Paralysis	1	1	2	1	1	...	...	...
Ruptures.....	2	...	2	1	...	1	...	1
General weakness of the body	...	2	2	...	...	...	2	2
Swelling of the glands	1	2	3	2	...	...	1	1
Chronic inflammation of the eye ...	...	1	1	1	...	...	...	...
Abdominal complaints	3	1	4	2	1	...	1	1
Sleeplessness	...	1	1	1	...	...	...	...
Congestion to the head	...	1	1	...	...	...	1	1
Gout.....	...	1	1	1	...	...	...	...
Hysteria	...	1	1	...	1	...	...	...
St. Vitus's dance.....	...	1	1	...	...	...	1	1
Epilepsy	1	...	1	...	...	1	...	1
	17	39	56	26	11	4	15	19

ROYAL INSTITUTION AT STOCKHOLM,

UNDER THE DIRECTION OF PROFESSOR BRANTING.

From Jan. 1 *to Dec.* 31, 1854.

970 persons attended the Institution, amongst these were 248 patients, of whom 106 were females and 142 males.

The most frequent diseases were—

Abdominal complaints.

Chest affections, especially pulmonary phthisis and pulmonary emphysema.

Paralysis, central and peripheric.

Mental diseases.

Chlorosis, and the diseases connected with this affection.

Organic diseases of the heart.

Developed glandular diseases.

Writing spasm.

Spinal curvatures.

In all diseases caused by irregular circulation, by anæmia, and hyperæmia of single organs, medical gymnastics proved a most excellent treatment. Chlorosis, a disease at present so frequent, with its consequences and combinations, with many other organic affections, has been treated successfully. The

same was the case with affections of the heart and pulmonary complaints. In a few cases, a hydrotherapeutic treatment was also used, especially baths for the limbs. Without any exaggeration, it may be maintained, judging from what medical gymnastics have done, that this science deserves the confidence which has been already bestowed on it.

Professor Branting mentions, also, the following observations which have been repeatedly made:—

1. That a gentle point-pressure for some seconds on the lower part of the deep-seated laryngeal vein, but avoiding the artery near it, produces an artificial hyperæmia in the mucous membrane of the windpipe. This passive movement is most beneficially applied in chronic catarrh, even of some years' standing, when this disease is produced by an abnormal nutrition of the mucous membrane, wrongly called inflammation. A repeated use of this passive movement has frequently removed an irritating cough (*Reizhusten*), a symptom of a catarrh of a serious character.

2. A percussion with the slightly clenched hand on the back, transversal to the spine, at the height of the stomach, outwards towards both sides of the trunk, removes the feeling of nausea caused by sympathetic influences or by nervous reflex.

3. An alternate upwards and downwards pressure, made with the tips of the fingers of both hands, below the left false ribs, will often immediately remove various cardialgic affections. A vibration directed upwards and inwards, made on the same place, with the hand bent towards the lower part of the ribs, often removes spasms of the stomach, heartburn, and various vascular irritations of the stomach.

List of Continental Institutions for the Treatment of Diseases by the Movement-cure, with the names of their Medical Superintendents.

Berlin (three), Drs. Neumann, Eulenburg, Lowenstein. Bonn, Dr. Budge. Breslau, Professor Remer. Christiania, Dr. Fugelli. Cassel, Dr. Becker. Dresden (two), Professor Richter, Dr. Flemming, and Dr. Friedrich. Freiberg, Mr. Nitzsche. Giessen, Drs. Weber (father and son). Hamburg, Mr. Scheerer. Heringsdorf, Dr. Wallenstädt. Königsberg (two), Dr. Vogelgesang and Dr. Münchenberg. Königsbrunn, Mr. Wilbold and Dr. Putzar. Leipzig, Dr. Schreber. Lago di Como, Dr. Mayer. Liebenstein, Dr. Martini. Misdroy, Dr. Oswaldt. Prague, Dr. Spott. Stuttgardt, Dr. Steudel. Stockholm (two), Professor Branting and Dr. Sätherberg. St. Petersburg, Mr. de Ron. Vienna (two), Dr. Melicher and Dr. Streintz. Wiesbaden, Dr. Genth. Würzburg, Dr. Confeld. Also Bromberg, Crefeld, Graudenz, and Posen have such Institutions.

Scientific Gymnastics in Lunatic Asylums.

In the new Lunatic Asylum at Vienna, the Austrian Government has ordered the introduction of this treatment. In the Lunatic Asylum at Sonnenstein, in Saxony, rational gymnastics are introduced; and Dr. Laehr has introduced the treatment in his private asylum, near Berlin.

Government Institutions for Scientific Educational Gymnastics.

Sweden, Russia, Prussia, Saxony, Austria, and Hesse-Darmstadt have *normal training Institutions for educational and military gymnastics*, supported by the Government, where anatomy, physiology, and hygiene are taught; the knowledge of these sciences being considered indispensable for the teachers of scientific gymnastics. Professor Branting at Stockholm, M. Rothstein at Berlin, M. de Ron at St. Petersburg, Mr. Spiess at Darmstadt, and Mr. Kloss at Dresden, are at the head of these Institutions.

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